

CATALOGUE

OF

DRAWING
MATERIALS

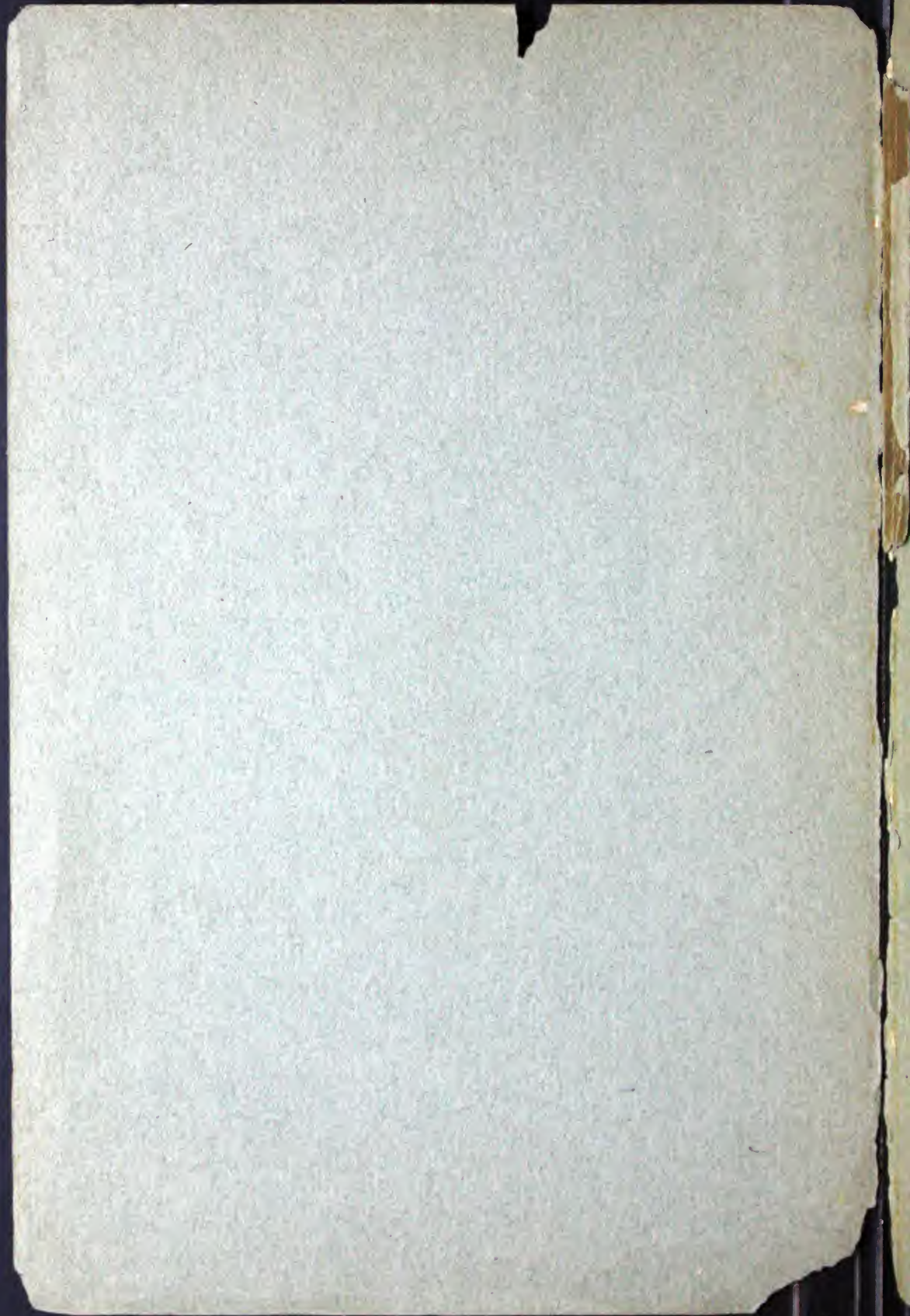
AND

SURVEYING
INSTRUMENTS

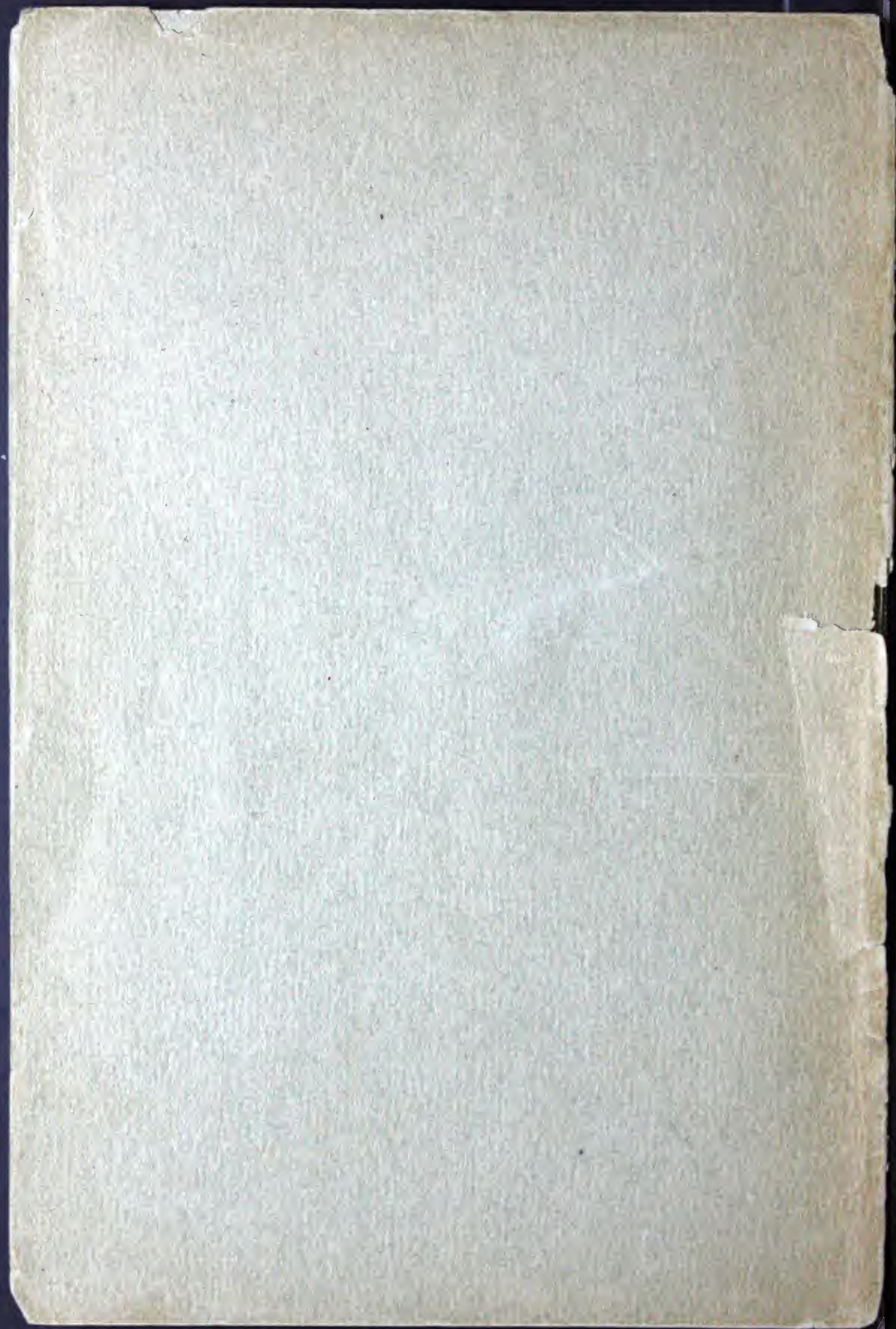


KOLESCH & CO.

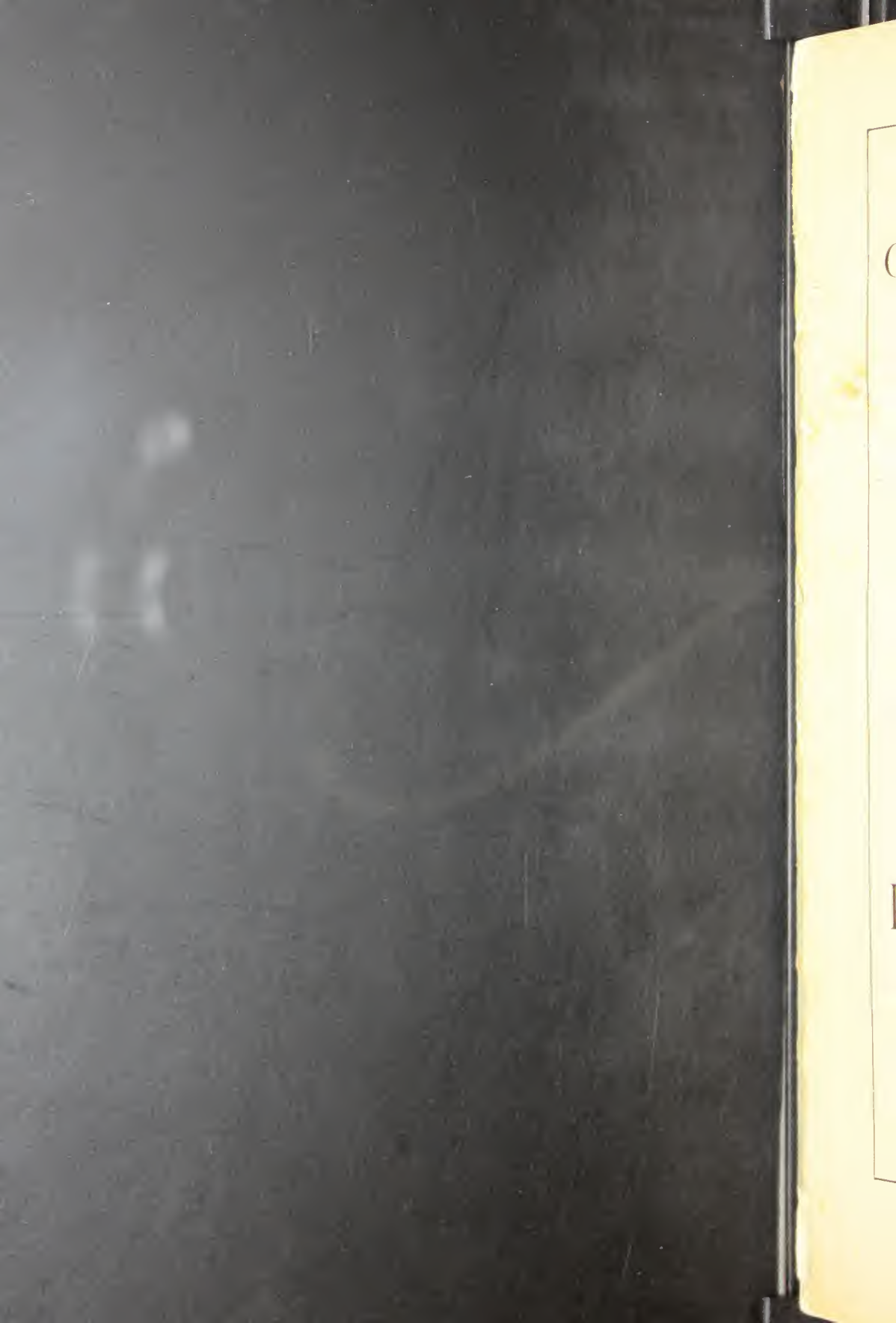
138 FULTON STREET, NEW YORK



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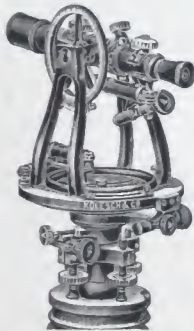


Illustrated
Catalogue and Price-List

OF

Drawing and Tracing Papers,
Sun Print Papers and Equipments,
Drawing Instruments and Materials,

*Surveying Instruments,
Accessories, etc.*



Kolesch & Company,

ESTABLISHED 1885,

138 Fulton Street, near Broadway,

NEW YORK.

Eighth Edition. . . . Price 50 cents.

Copyright 1907 by Kolesch & Co.

NOTICE.

In ordering from this Catalogue the numbers of the articles should be given, also size or other description of the articles wanted.

To firms of known responsibility we will sell on 30 days' time.

Firms who have not dealt with us heretofore will confer a favor by sending references or remittance with first order.

If goods are ordered C. O. D., a remittance of Five Dollars must accompany the order.

We are not responsible for damage or loss of goods if ordered to be sent by mail.

Mail packages can be registered at 8 cents per package, or insured at 5 cents.

Packing boxes, when required, will be charged at cost price.

All goods listed in this Catalogue are guaranteed to be exactly as represented. Should it happen that any article is not satisfactory, same will be promptly replaced. It has always been our policy to satisfy our customers to the fullest extent and thereby maintain the reputation we have established during the past twenty years.

KOLESCH & CO.

511 5146 01 21



Drawing Papers and Water Color Boards.

Whatman's Drawing Paper made in three different surfaces :

Hot pressed Whatman's Paper has a smooth surface, mostly used for fine line drawings, pen and ink sketches, etc.

Cold pressed has a slightly grained surface, used for general and finely finished water color drawings.

Extra Rough has a coarsely grained surface, used for very bold drawings and water color work, and is only made in Royal, Imperial and Double Elephant.

1 Whatman's Hand Made Paper. Best selected :

Cap.....	13 x 17 in.....	per quire, \$	.80
Demy.....	15 x 20 in.....	"	.95
Medium.....	17 x 22 in.....	"	1.40
Royal.....	19 x 24 in.....	"	1.80
Super Royal.....	19 x 27 in.....	"	2.10
Imperial.....	22 x 30 in.....	per sheet, \$	.15
Double Elephant.....	27 x 40 in.....	"	.25
Antiquarian.....	31 x 53 in.....	"	1.50
			27.00

Prices for "Retré," or second grade, furnished on application.

2 Whatman's Extra Heavy. Best selected :

Imperial.....	22 x 30 in.....	per quire, \$	6.90....	per sheet, \$	.40
Double Elephant.....	27 x 40 in.....	"	10.00	"	.60

Whatman's Drawing Paper mounted on heavy boards :

9 Imperial.....	21½ x 29½ in.....	per dozen, \$	6.00	per sheet, \$	.60
10 Double Elephant.....	26½ x 39½ in.....	"	12.00	"	1.20

Steinbach's Paper, a very fine white paper with slightly grained surface; used for pencil, crayon and water color sketches :

11 54 inches wide, Medium.....	roll of 10 yards, \$	3.30
12 54 inches wide, Thick.....	" 10 "	5.00

Steinbach's Paper, mounted on heavy boards :

13 22 x 30 inches, Heavy.....	per dozen, \$	5.00....	per sheet, \$	.50
14 27 x 40 inches, Heavy.....	"	7.50....	"	.75

Illustration Boards. These boards are covered with a fine grade of Water Color Paper. Although not as fine in quality as Steinbach's boards, they answer for water color and designers' sketches, etc.

20 20 x 30 inches.....	per dozen, \$	2 50....	per sheet, \$	.25
21 30 x 40 inches.....	"	3 50....	"	.35

22 Scratch Board, sometimes called **Chalk Board**, for Black and White work and Process Reproduction :

Imperial, 22 x 28 inches.....	per dozen, \$	4.00....	per sheet, \$.35
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Samples of any of above sent free on application. Complete sample book, 10c.

TC 10 97 13 1153



Strathmore Boards.

- 23 Cold Pressed or Rough Surface, suitable for pencil, pen and water color drawings:

2-Ply, $11\frac{1}{2} \times 14\frac{1}{2}$ inches.....	per quire \$.90....	per sheet, \$.05
“ 14 x 23 “	“ 1.80....	“ .10
“ 23 x 29 “	“ 3.60....	“ .20
3-Ply, $11\frac{1}{2} \times 14\frac{1}{2}$ “	“ 1.35....	“ .07
“ 14 x 23 “	“ 2.70....	“ .14
“ 23 x 29 “	“ 5.40....	“ .28
4-Ply, $11\frac{1}{2} \times 14\frac{1}{2}$ “	“ 1.80....	“ .10
“ 14 x 23 “	“ 3.60....	“ .20
“ 23 x 29 “	“ 7.20....	“ .40

- 24 Hot Pressed or Smooth Surface, suitable for pen and ink drawings:

2-Ply, $11\frac{1}{2} \times 14\frac{1}{2}$ inches.....	per quire, \$.90....	per sheet, \$.05
“ 14 x 23 “	“ 1.80....	“ .10
“ 23 x 29 “	“ 3.60....	“ .20
3-Ply, $11\frac{1}{2} \times 14\frac{1}{2}$ “	“ 1.35....	“ .07
“ 14 x 23 “	“ 2.70....	“ .14
“ 23 x 29 “	“ 5.40....	“ .28
4-Ply, $11\frac{1}{2} \times 14\frac{1}{2}$ “	“ 1.80....	“ .10
“ 14 x 23 “	“ 3.60....	“ .20
“ 23 x 29 “	“ 7.20....	“ .40

Reynolds' Bristol Boards.

- 25 Reynolds' Bristol Boards, smooth surface, 2-ply:

Cap	$12\frac{1}{2} \times 15\frac{1}{4}$	per doz. \$.60
Demy.....	$14\frac{5}{8} \times 18\frac{1}{4}$	“ .90
Medium.....	$16\frac{1}{2} \times 20\frac{3}{4}$	“ 1.20
Royal.....	$18\frac{1}{4} \times 22\frac{3}{4}$	“ 1.50

- 26 Reynolds' Bristol Boards, smooth surface, 3-ply:

Cap	$12\frac{1}{2} \times 15\frac{1}{4}$	per doz. \$.90
Demy	$14\frac{5}{8} \times 18\frac{1}{4}$	“ 1.35
Medium.....	$16\frac{1}{2} \times 20\frac{3}{4}$	“ 1.80
Royal	$18\frac{1}{4} \times 22\frac{3}{4}$	“ 2.40
Imperial	$21\frac{1}{2} \times 28\frac{3}{4}$	“ 4.70

- 27 Reynolds' Bristol Boards, smooth surface, 4-ply:

Cap	$12\frac{1}{2} \times 15\frac{1}{4}$	per doz. \$ 1.20
Demy	$14\frac{5}{8} \times 18\frac{1}{4}$	“ 1.75
Medium.....	$16\frac{1}{2} \times 20\frac{3}{4}$	“ 2.40
Royal	$18\frac{1}{4} \times 22\frac{3}{4}$	“ 3.10
Imperial	$21\frac{1}{2} \times 28\frac{3}{4}$	“ 6.00

Samples of any of above sent free on application. Complete sample book, 10c.

Patent Office Blanks and Mounting Boards.



42 and 43.



44 and 45.

Patent Office Blanks, printed with border as prescribed by U. S. Patent Office :

		Per sheet.	Per doz.	Per gross.
42	10 x 15 on 2-ply Reynolds' Bristol Board	\$.08.....	\$.75.....	\$ 7.50
43	10 x 15 on 3-ply " " " .....	.10.....	1.00.....	10.00

Patent Office Blanks, printed with border as prescribed by U. S. Patent Office, with an additional faint cutting line at 10 x 15 inches. This gives a margin useful for inserting thumb-tacks, memorandums, testing ruling pens, etc. :

		Per sheet.	Per doz.	Per gross.
44	11 x 15 on 2-ply Reynolds' Bristol Board.....	\$.10.....	\$.85.....	\$ 8.50
45	11 x 15 on 3-ply " " " .....	.11.....	1.10.....	11.00

Mat Boards, rough embossed surface, for mounting drawings, sketches, etc. ; also for making picture mats ; *gray* on one side and *white* on the other. Either side can be used :

48	Double, 20 x 30 (about $\frac{3}{8}$ in. thick).....	per sheet, \$.25....	per doz. \$ 2.50
49	Double, 30 x 40 (about $\frac{3}{8}$ in. thick).....	" .50....	" 5.00
50	Treble, 38 x 52 (about $\frac{1}{8}$ in. thick).....	" .95....	" 9.00

Mounting Boards, white, for mounting drawings, sketches, etc. :

51	22 x 28, white, 4-ply.....	per sheet, \$.08....	per doz. \$.75
52	22 x 28, white, 6-ply.....	" .10....	" 1.00
53	22 x 28, white, 8-ply.....	" .12....	" 1.20
54	22 x 28, white, 10-ply.....	" .15....	" 1.50

Samples of any of above sent free on application. Complete sample book for 10c.

Drawing Papers in Rolls.

- 55 **Chartographic Drawing Paper. White, Smooth Surface.** Strongest paper made. Will stand unlimited erasing. Suitable for maps or other drawings where great strength and durability are desired:

	Per 50 yds.	25 yds.	10 yds.	yard
24 inches wide.....	\$ 7.00.....	\$3.75.....	\$1.60.....	\$.20
36 " "	10.00.....	5.25.....	2.15.....	.25
62 " "	19.00.....	9.75.....	4.00.....	.45
In original rolls of 40-50 pounds.....	per lb. .45			

Sheets of various sizes cut to order at proportionate rates.

- 62 **Eggshell Drawing Paper. Thin. White. Rough Surface:**

	Per 50 yds.	25 yds.	10 yds.	yard
58 inches wide.....	\$16.60.....	\$9.50	\$4.00.....	\$.45

- 65 **Eggshell Drawing Paper. Medium. White. Rough Surface:**

	Per 50 yds.	25 yds.	10 yds.	yard
36 inches wide.....	\$13.25.....	\$ 7.20.....	\$3.00.....	\$.33
42 " "	14.75.....	8.40.....	3.50.....	.36
58 " "	19.50.....	10.80.....	4.50.....	.45

- 68 **Eggshell Drawing Paper. Heavy. White. Rough Surface:**

	Per 25 yds.	10 yds.	yard
58 inches wide.....	\$13.50.....	\$5.75.....	\$.65
In original rolls of 30-40 pounds, Eggshell Papers Nos. 62, 65 and 68, per lb.	.50		

- 75 **German Drawing Paper. White, slightly grained surface for general work:**

	Per 50 yds.	25 yds.	10 yds.	yard
36 inches wide.....	\$5.75.....	\$3.00.....	\$1.50.....	\$.20
42 " "	6.50.....	3.50.....	1.75.....	.24
In original rolls of 30-40 pounds.....	per lb. .35			

Sheets of various sizes cut to order at proportionate rates.

- 80 **Triplex Drawing Paper. Cream color, slightly grained surface for general work.**

This paper is tough and on account of the cream color, is agreeable to the eye. Will take ink, pencil or water color and will stand severe erasing:

	Per 100 yds.	50 yds.	25 yds.	10 yds.	yard
30 inches wide.....	\$ 9.00.....	\$4.80.....	\$3.00.....	\$1.20.....	\$.12
36 " "	10.00.....	5.40.....	3.40.....	1.35 .....	.15
42 " "	12.75.....	6.60.....	4.15.....	1.65.....	.20
62 " "	18.75.....	9.60.....	6.00.....	2.40.....	.30
In original rolls of 40-50 pounds.....	per lb. .29				

Samples of any of above sent free on application. Complete sample book for 10c.

Drawing Papers in Sheets.

90 **Triplex Drawing Paper.** Cream color, same as No. 80:

Imperial.....	22 x 30 inches.....	per quire, \$1.60.....	per sheet, \$.10
Standard.....	24 x 36 ".....	" 2.40.....	" .15
Double Elephant...	27 x 40 ".....	" 2.60.....	" .17

100 **Academy Drawing Paper** (for school use). White, medium surface:

Cap.....	14 x 17 inches.....	per quire, \$.20
Demy.....	15½ x 19½ ".....	" .35
Medium.....	18 x 23 ".....	" .45
Royal.....	19 x 24 ".....	" .60
Imperial.....	22 x 30 ".....	" .75

Charcoal Drawing Paper:

101	19 x 25, white.....	per quire \$.60
102	19 x 25, various tints.....	" .60

Mounted Drawing Papers in Rolls and in Sheets.

105 **Chartographic Drawing Paper.** Mounted on Muslin. Heavy. Smooth Surface. Strongest paper made:

36 inches wide	per 10 yards, \$ 6.60.....	yard, \$.85
62 " "	" 12.50.....	" 1.50

108 **Eggshell Drawing Paper.** Mounted on Muslin. Medium. Rough Surface:

36 inches wide.....	per 10 yards, \$ 7.50.....	yard, \$.90
42 " "	" 8.85.....	" 1.00
58 " "	" 11.75.....	" 1.40

109 **German Drawing Paper.** Mounted on Muslin. White. Medium Thick. Slightly grained surface:

36 inches wide.....	per 10 yards, \$ 5.40.....	yard, \$.70
42 " "	" 6.75.....	" .80

110 **Triplex Drawing Paper.** Mounted on Muslin. Cream Color. Slightly grained surface:

36 inches wide.....	per 10 yards, \$ 5.40.....	yard, \$.70
42 " "	" 6.75.....	" .80
62 " "	" 10.00.....	" 1.20

112 **Whatman's Drawing Paper.** Mounted on Muslin. When ordering, please specify whether "Hot Pressed" or "Cold Pressed" is desired:

		Per dozen	Per sheet
Royal.....	19 x 24 inches.....	Selected Best, \$ 4.20.....	\$.35
Imperial.....	22 x 30 ".....	" 5.40.....	.45
Double Elephant..	27 x 40 ".....	" 8.40.....	.70
Antiquarian.....	31 x 53 ".....	" 21.60.....	1.80
Antiquarian.....	31 x 53 ".....	Retrée 16.20.....	1.35

Samples of any of above sent free on application. Complete sample book for 10c.



Detail Paper in Rolls.

- 130 "Bleecker" Detail Paper, Medium, buff color, Cold Pressed Surface, will bear severe erasing:

	Per 100 yds.	50 yds.	25 yds.	10 yds.
36 inches wide.....	\$4.00.....	\$2.50.....	\$1.50.....	\$.60
42 " "	4.70.....	2.95.....	1.75.....	.75
48 " "	5.35.....	3.35.....	1.95.....	.87
54 " "	6.00.....	3.75.....	2.25.....	1.00

- 135 "Bleecker" Detail Paper, Heavy, buff color, Cold Pressed Surface, will bear severe erasing:

	Per 100 yds.	50 yds.	25 yds.	10 yds.
36 inches wide.....	\$5.00.....	\$3.12.....	\$1.75.....	\$.75
42 " "	5.75.....	3.60.....	1.95.....	.85
48 " "	6.75.....	4.25.....	2.25.....	1.00
54 " "	7.50.....	4.70.....	2.40.....	1.10

- 150 "Beekman" Detail Paper, Medium, salmon color, Cold Pressed Surface, will bear severe erasing:

	Per 100 yds.	50 yds.	25 yds.	10 yds.
36 inches wide.....	\$4.00.....	\$2.50.....	\$1.50.....	\$.60
42 " "	4.70.....	2.95.....	1.75.....	.75
48 " "	5.35.....	3.35.....	1.95.....	.87
54 " "	6.00.....	3.75.....	2.25.....	1.00

- 155 "Beekman" Detail Paper, Heavy, salmon color, Cold Pressed Surface, will bear severe erasing:

	Per 100 yds.	50 yds.	25 yds.	10 yds.
36 inches wide.....	\$5.00.....	\$3.12.....	\$1.75.....	\$.75
42 " "	5.75.....	3.60.....	1.95.....	.85
48 " "	6.75.....	4.25.....	2.25.....	1.00
54 " "	7.50.....	4.70.....	2.40.....	1.10

Any of above Detail Papers in original rolls of 100-150 lbs.....per lb. .12

- 158 Smooth Detail Paper, suitable for patterns, stencils or stone-yard drawings. Made in the following weights: X, XX, XXX, XXXX:

36, 40, 48 and 54 inches wide. In original rolls of 100-150 pounds, per lb. \$.10

- 160 Manilla Sketching Paper, light weight, suitable for preliminary drawings or details where no great strength is required. Will bear erasing and will take ink or pencil:

	Per 100 yds.	50 yds.	25 yds.
40 inches wide.....	\$3.25.....	\$1.85.....	\$1.00
48 " "	4.00.....	2.20.....	1.25

Samples of any of above sent free on application. Complete sample book for 10c.



Tracing Cloths.

- 165 "Pellucid" Tracing Cloth. Dull Back. Very Transparent and particularly recommended on account of the absence of pin holes:

	18 in.	30 in.	36 in.	42 in.	48 in.	54 in. wide
Rolls of 24 yards.	\$3.90....	\$6.90....	\$7.60....	\$10.30....	\$16.00...	\$17.00
	18 in.	30 in.	36 in.	42 in.	48 in.	54 in. wide
Rolls of 12 yards.	\$2.15....	\$3.75....	\$4.15....	\$5.65....	\$8.50....	\$9.00

- 166 Imperial Tracing Cloth. Dull Back:

	30 in.	36 in.	42 in.	48 in.	54 in. wide
Rolls of 24 yards.	\$8.10.....	\$9.00.....	\$12.10.....	\$16.00.....	\$17.00

- 167 Dowse's Tracing Cloth. Dull Back:

	30 in.	36 in.	42 in. wide
Rolls of 24 yards.....	\$6.40.....	\$7.40.....	\$10.00

- 168 Reliance Tracing Cloth. Dull Back. Extra Heavy:

	30 in.	37 in.	43 in. wide
Rolls of 24 yards.....	\$6.40...	\$7.40.....	\$10.00

- 169 Remnants Tracing Cloth. Dull Back:

	30 in.	36 in.	42 in. wide
Rolls of 24 yards.....	\$4.35.....	\$4.95.....	\$6.05

Samples of any of above sent free on application. Complete sample book for 10c.

Tracing Cloth Powder.

- 170 Tracing Cloth Powder, for spreading on Tracing Cloth to remove any superfluous grease or oil in order to allow the ink to flow more freely on the cloth:
In tin shakers..... Per dozen, \$1.50..... Each, \$.15

Inkoff.

- 171 Tracing Cloth Erasing Fluid, for erasing Black Waterproof Drawing Ink without injury to the Tracing Cloth. Outfit, consisting of 2 oz. bottle of Inkoff, Sponges, Cloths and directions for use, packed in a neat wooden box..... Each \$1.00



Tracing Papers in Rolls.

- 172 "Barclay" Transparent Sketching Paper. White. Unprepared. Very Strong. Suitable for details and preliminary sketches. Will take pencil, ink or water colors, and stands severe erasing with knife or rubber.
- | | | | |
|--------------------------|--------|--------|-------------|
| | 30 in. | 36 in. | 60 in. wide |
| Rolls 50 yards long..... | \$1.75 | \$2.00 | \$3.25 |
- 174 "Howard" Tracing Paper. White. Very Transparent. Has a slight grain which takes pencil or ink readily. Contains no oil or other preparation and therefore will not turn brittle or yellow with age:
- | | | |
|------------------------|--------|-------------|
| | 29 in. | 58 in. wide |
| Rolls of 44 yards..... | \$2.30 | \$4.60 |
| Rolls of 22 yards..... | 1.25 | 2.30 |
- 175 "Pellucid" Tracing Paper. Thin. Unprepared. Very Transparent and Tough:
- | | | |
|------------------------|---------------------|--------|
| Rolls of 20 yards..... | 42 inches wide..... | \$1.50 |
| " " 50 " | 42 " " | 3.50 |
- 176 "Pellucid" Tracing Paper. Medium. Unprepared. Very Transparent and Tough. Suitable as a tracing cloth substitute, as very good blue prints can be made from tracings drawn on this paper:
- | | | |
|------------------------|---------------------|--------|
| Rolls of 20 yards..... | 42 inches wide..... | \$2.00 |
| " " 50 " | 42 " " | 4.50 |
- 178 Superfine German Tracing Paper. Smooth. Wax finish. Very tough and transparent. Frequently used as a substitute for tracing cloth. Very good blue prints can be made from tracings drawn on this paper:
- | | | | |
|------------------------|--------|--------|-------------|
| | 29 in. | 40 in. | 58 in. wide |
| Rolls of 20 yards..... | \$2.50 | \$3.20 | \$4.50 |
- 179 Anglo Tracing Paper. Oiled. Medium Thick:
- | | |
|---------------------|------------------------------|
| 40 inches wide..... | per roll of 20 yards, \$2.75 |
|---------------------|------------------------------|
- 180 Parchment Tracing Paper. Thin. Very transparent:
- | | |
|---------------------|------------------------------|
| 39 inches wide..... | per roll of 20 yards, \$2.00 |
|---------------------|------------------------------|
- 181 Parchment Tracing Paper. Medium. Very hard smooth Surface. Very highly transparent:
- | | |
|---------------------|------------------------------|
| 39 inches wide..... | per roll of 20 yards, \$4.00 |
|---------------------|------------------------------|
- 182 Parchment Tracing Paper. Heavy. Very hard smooth surface. Highly transparent:
- | | |
|---------------------|------------------------------|
| 39 inches wide..... | per roll of 20 yards, \$5.00 |
|---------------------|------------------------------|
- Samples of any of above sent free on application. Complete sample book for 10c.



Tracing Paper in Rolls—continued.

- 184 **Bond Tracing Paper:**
42 inches wide.....per roll of 20 yards, \$1.35
- 185 **Glass Tracing Paper.** Thin. Transparent, like glass:
42 inches wide.....per roll of 20 yards, \$1.50
- 186 **Manilla Tracing Paper.** For tracing details or full size drawings:
Per 100 yds. 50 yds.
40 inches wide.....\$2.40.....\$1.25
48 " " 3.00..... 1.75
- 188 **"Fulton" Tracing Paper.** White. Rough surface. For detail or full size tracings:
Per 100 yds. 50 yds.
36 inches wide.....\$3.00.....\$1.90
48 " " 4.00..... 2.50

Tracing Papers in Sheets.

- 190 **"Pellucid" Tracing Paper.** Thin. (Same as No. 175):
20 x 27 inches.....per quire, \$.80
- 191 **"Pellucid" Tracing Paper.** Medium. (Same as No. 176):
20 x 27 inches.....per quire, \$1.00
- 192 **French Vegetable Tracing Paper:**
Cap.....13 x 17 inchesper quire, \$.90
Medium16 x 20 " " 1.25
Royal19 x 25 " " 2.00
Imperial22 x 28 " " 2.50
- 193 **Crane's Bond Paper:**
- | | Thin
No. 16 | Med.
No. 18 | Heavy
No. 21 | Ex. Heavy
No. 25 |
|---------------------------------------|----------------|----------------|-----------------|---------------------|
| Medium ....16 x 21 inches..per quire, | \$1.10 | \$1.15 | \$1.20 | \$1.30 |
| Royal .....19 x 24 " .. " | 1.20 | 1.25 | 1.30 | 1.50 |
| Super Royal. 19 x 30 " .. " | 1.40 | 1.45 | 1.50 | 1.65 |
| Imperial ....21 x 33 " .. " | 1.75 | 1.80 | 2.00 | 2.50 |
- 194 **India Proof Paper.** For Wood Engravers' use:
13 x 44 inches.....per bundle of 96 sheets, \$4.50.....per doz. \$.50
- 195 **Gelatine or Glass Paper.** Extremely transparent. Medium thickness:
17 x 21 inches.....per dozen, \$3.00.....per sheet, \$.25
- Samples of any of above sent free on application. Complete sample book for 10c.



Prepared Blue Process Papers and Cloth.

For making copies (sun prints) from tracings, in white lines on blue ground.

DIRECTIONS.—The sensitized paper is exposed under the tracing to the light, either in a printing frame or over a flat board covered with a felt cushion and a heavy plate glass. As it is very essential that the tracing and the sensitized paper should be in good contact, a printing frame is preferred. After correct exposure to the light, the paper is put into a water bath, which will at once develop clear white lines on a blue ground (the paper should be handled in dim light only).

Superior Blue Process Papers, quality "A." Sensitized with regular or extra quick printing solutions. Being specially sensitized according to the best formulas, give excellent results and retain their sensitiveness longer than any other papers. They are therefore highly recommendable for export, advertising, prints from photographic negatives, and such other work where a first-class blue print is required.

196 Superior "A." Blue Process Papers. **Parchment, Thin.** Suitable for mailing:

	50 yds.	25 yds.	10 yds.
30 inches wide.....	\$4.75	\$2.50	\$1.10
36 " "	5.25	3.00	1.25
42 " "	6.00	3.50	1.50
54 " "	12.50	7.00	3.00

197 Superior "A." Blue Process Papers. **Medium:**

	50 yds.	25 yds.	10 yds.
30 inches wide.....	\$4.75	\$2.50	\$1.10
36 " "	5.25	3.00	1.25
42 " "	6.00	3.50	1.50
54 " "	12.50	7.00	3.00

198 Superior "A" Blue Process Papers. **Heavy:**

	50 yds.	25 yds.	10 yds.
30 inches wide.....	\$6.50	\$3.50	\$1.40
36 " "	7.00	4.00	1.70
42 " "	7.50	4.25	1.90
54 " "	15.00	7.25	3.50

Superior Blue Process Papers, Quality "B," give very good results and are recommended for general use. Sensitized with regular or quick printing solution.

202 Superior "B" Blue Process Papers. **Parchment, Thin.** Suitable for mailing:

	50 yds.	25 yds.	10 yds.
30 inches wide.....	\$3.60	\$2.00	\$.85
36 " "	4.20	2.25	.95
42 " "	4.75	2.50	1.10

Samples of any of above sent free on application. Complete sample book for 10c.



Prepared Blue Process Papers and Cloth—Continued.

203 Superior "B" Blue Process Papers. Medium :


	50 yds.	25 yds.	10 yds.
30 inches wide.....	\$4.10.....	\$2.10.....	\$.85
36 " "	4.70.....	2.45.....	1.00
42 " "	5.30.....	2.75.....	1.15

204 Superior "B" Blue Process Papers. Heavy :

	50 yds.	25 yds.	10 yds.
30 inches wide.....	\$4.75.....	\$2.45.....	\$1.00
36 " "	5.50.....	2.80.....	1.15
42 " "	6.25.....	3.20.....	1.30

210 Superior Blue Process Cloth, sensitized, indispensable for plans which are used out-of-doors, or which are subjected to very rough handling :

	50 yds.	25 yds.	10 yds.
30 inches wide.....	\$13.50.....	\$7.00.....	\$2.90
36 " "	14.00.....	7.50.....	3.20
42 " "	18.00.....	10.00.....	4.40
54 " "	27.00.....	14.00.....	6.00

 **Extra Quick Blue Print Paper.** Any of the above Papers or Cloth, if so ordered, can be prepared with an extra quick printing solution, which during the winter months is a decided advantage. Paper thus prepared prints in about 10 minutes in cloudy weather, whereas the regular blue process paper would require an exposure of an hour or more.

When ordering please mention whether Extra Quick or regular solution is wanted.

Domestic Blue Process Papers.

Suitable for shop prints. Sensitized with regular or quick printing solution.

212 Domestic Blue Process Papers. Thin :

	50 yds.	25 yds.	10 yds.
24 inches wide.....	\$2.00.....	\$1.30.....	\$.65
27 " "	2.25.....	1.40.....	.70
30 " "	2.50.....	1.50.....	.75
36 " "	2.85.....	1.70.....	.85
42 " "	3.15.....	1.90.....	.95

213 Domestic Blue Process Papers. Medium :

	50 yds.	25 yds.	10 yds.
24 inches wide.....	\$2.00.....	\$1.30.....	\$.65
27 " "	2.25.....	1.40.....	.70
30 " "	2.50.....	1.50.....	.75
36 " "	2.85.....	1.70.....	.85
42 " "	3.15.....	1.90.....	.95

Samples of any of above sent free on application. Complete sample book for 10c.



Erasing Fluids.

For making alterations on Blue Prints.

214 Oxaline Erasing Fluid for Blue Prints.

White.....	per bottle, \$	.15
Red.....	"	.15
Yellow.....	"	.15

Unprepared Blue Process Papers and Cloth.

296 Superior "A" Blue Process Papers. Unprepared. Thin :

	30 in.	36 in.	42 in. wide
50 yard rolls.....	\$3.20.....	\$3.80.....	\$4.20

297 Superior "A" Blue Process Papers. Unprepared. Medium :

	30 in.	36 in.	42 in. wide
50 yard rolls.....	\$4.00.....	\$4.75.....	\$5.25

298 Superior "A" Blue Process Papers. Unprepared. Heavy :

	30 in.	36 in.	42 in. wide
50 yard rolls.....	\$6.00.....	\$7.00.....	\$8.00

302 Superior "B" Blue Process Papers. Unprepared. Thin :

	30 in.	36 in.	42 in. wide
50 yard rolls.....	\$2.40.....	\$2.70.....	\$3.30

303 Superior "B" Blue Process Papers. Unprepared. Medium :

	30 in.	36 in.	42 in. wide
50 yard rolls.....	\$2.85.....	\$3.30.....	\$3.85

304 Superior "B" Blue Process Papers. Unprepared. Heavy :

	30 in.	36 in.	42 in. wide
50 yard rolls.....	\$3.30.....	\$4.20.....	\$4.80

310 Superior Blue Process Cloth. Unprepared :

	30 in.	36 in.	42 in.	54 in. wide
10 yard rolls.....	\$2.40.....	\$2.70.....	\$3.80.....	\$5.20

Samples of any of above sent free on application. Complete sample book for 10c.



Various Copying Processes and Papers.

Sun Printing of Every Description.

Blue Prints. White lines on a blue ground. Best suited for workshop or for advertising purposes:

Blue Prints on paper.....per square foot, 2 c.

Blue Prints on cloth....." " 5 c.

No Prints made for less than 5 c.

Special rates to large consumers.

Prices of sensitized papers, also directions, see pages 12 and 13.

Black Prints. Dark lines on a light ground. Suited for copies which are to be colored:

Black Prints on paper.....per square foot, 3 c.

Black Prints on cloth....." " 5 c.

No Prints made for less than 10 c.

Brown Prints. Dark brown lines on a white ground. This process requires the making of a negative from the tracing (white lines on a brown ground), and from this negative the brown prints proper are made. With the ordinary blue process paper we can make prints from the negative with blue lines on a white ground:

Negatives from tracings.....per square foot, 8 c.

Brown Prints from negatives....." " 8 c.

Blue Prints from negatives....." " 3 c.

Negatives from Patent Office Drawings.....each, 25c.

No Prints made for less than 10 c.

Black Process Papers and Cloth.

385 Black Process Papers. Sensitized. With the aid of this paper very good black prints (black lines on a white ground), can be produced **direct from the tracing**. The manipulation is as simple as the blue process and requires nothing more than a plain water bath. No chemicals necessary. Instructions with every roll:

	30 in.	36 in.	42 in. wide.
10 yard rolls	\$2.00	\$2.50	\$3.00

386 Black Process Cloth. Manipulation same as No. 385:

	30 in.	36 in.	42 in. wide.
10 yard rolls	\$4.00	\$4.50	\$5.50



Brown Process Papers and Cloth.

Brown Process Papers. Sensitized. Produce a negative (white lines on a dark ground). From this negative, positive copies (dark lines on a white ground), can be made. Or, with the aid of ordinary blue print paper, positives (blue lines on a white ground), can be produced from the same negative.

DIRECTIONS FOR USE.—Expose the tracing in the usual manner with the prepared paper under it. About two minutes' exposure in good sunlight is sufficient. Wash the print in plain water for about 15 minutes, then place in a water bath to which the Fixing Salt has been added. After leaving in this Fixing Bath for a few minutes, wash well in clear water and then hang print up to dry.

Fixing Bath consists of 1 oz. of Fixing Salt dissolved in one quart of water.

- 390 **Brown Process Paper.** Thin, for negatives and for positives which are to be mailed:

	30 in.	36 in.	42 in. wide.
10 yard rolls.....	\$1.80	\$2.10	\$2.40

- 391 **Brown Process Paper.** Medium Thick:

	30 in.	36 in.	42 in. wide.
10 yard rolls.....	\$1.80	\$2.10	\$2.40

- 395 **Brown Process Cloth.** Prepared:

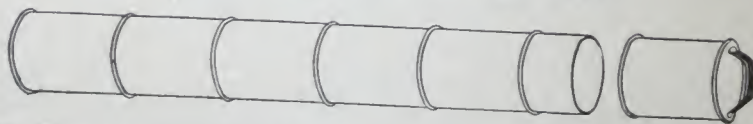
	30 in.	36 in.	42 in. wide.
10 yard rolls.....	\$4.20	\$4.80	\$6.00

Fixing Salts and full directions with every roll.

- 396 **Fixing Salt.**

Per 4 ounce box	\$.15
Per 1 pound box.....	.40

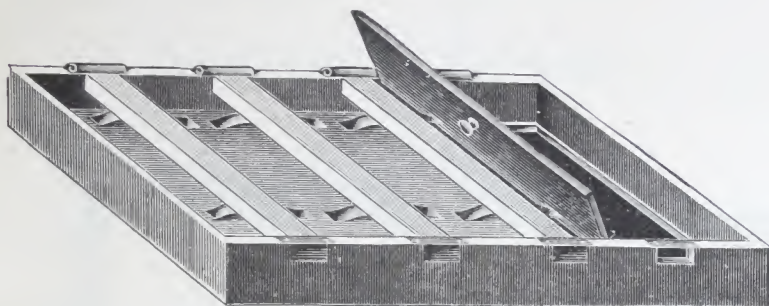
Metal Tubes for Preserving Paper.



Metal Tubes for Preserving Sun Print Papers, Tracing Cloth, Tracing Papers, etc.
They are made of tin, with tightly fitting slip covers to exclude moisture, light or dust:

- 400 4 in. diameter, to hold 50 yard rolls of Blue Print Paper:
30 in., \$1.00.....36 in., \$1.10.....42 in., \$1.25
- 402 2½ in. diameter, to hold 10 yard rolls of Blue Print Paper:
30 in., \$.90.....36 in., \$.95.....42 in., \$1.00

Sun Printing Outfits.



- 525 Sun Printing Frames, Best Quality, Hardwood Frame with Strong, Durable Springs. Complete with polished plate glass and felt cushion :

	20x24	24x30	30x36	30x42	36x48	36x60	42x60	42x72
Each,	\$4.00	\$12.50	\$18.50	\$22.75	\$34.10	\$43.00	\$48.70	\$62.00
Frame only,	6.25	8.00	11.00	12.50	16.00	20.00	22.50	29.00

Above sizes denote dimensions of the glass. Printing surface will be about one inch less.

- 550 Blue Print Frames for Patent Office Drawings, Hardwood, with Double Thick Glass and Cushion :

11 x 16.....each,	\$2.75	16 x 20.....each,	\$4.75
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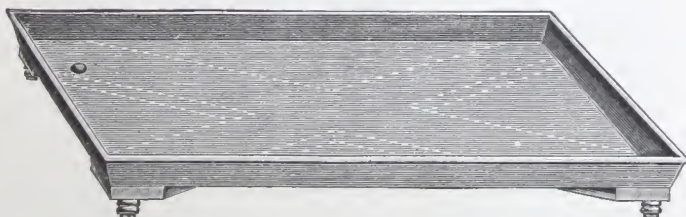
Special sizes made to order at short notice.

- 553 Felt for Printing Frames, about $\frac{1}{4}$ inch thick, best quality :

Per square foot.....	\$.40
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- 555 Spring Clips for suspending prints while drying :

Per dozen.....	\$.25
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- 650 Zinc Bath Trays, for developing blue or black prints. Best quality with Drain Pipe, Strong Wired Rim, and Hardwood Braces :

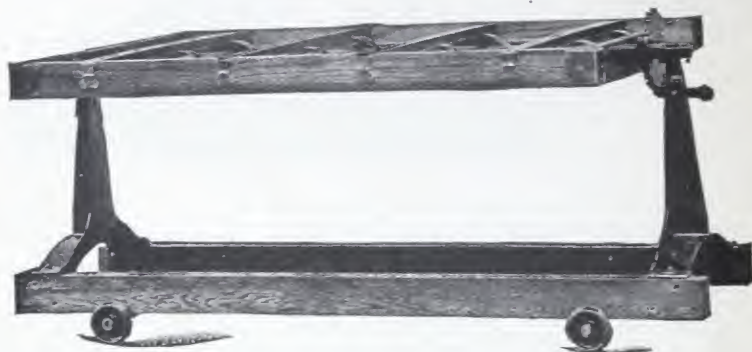
	20x24	24x30	30x36	30x42	36x48	36x60	42x60	42x72
Each,	\$4.75	\$6.00	\$7.00	\$7.75	\$9.25	\$10.35	\$13.00	\$15.50

- 655 Plain Bath Tray for Frames No. 550 :

12 x 17 in.....each,	\$2.00	17 x 22 in.....each,	\$2.75
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Print Frames on Wheel Carriages.



These Carriages and Frames are made of hardwood and are substantial in construction. The Frame revolves in the standards, can be tilted to any angle, and by means of a notched wheel can be fastened in any desired position. A Frame which is much wider than the window can be swung through, and afterwards adjusted to the proper angle to catch the sunlight.

670 **Printing Frame** with polished Plate Glass and Cushion, complete with Frame on Carriage :

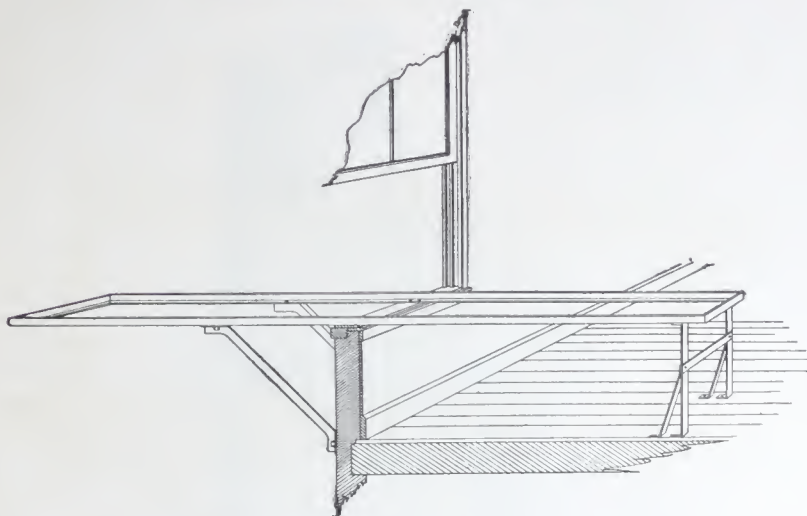
24x30	30x42	36x48	36x60	42x60	42x72
Each, \$32.60	\$44.25	\$58.20	\$68.00	\$75.00	\$89.25

Wheel Carriages.

675 **Wheel Carriages only, without Frames :**

For Frames, sizes.....	24x30	30x42	Each, \$20.00
" " "	36x48 and larger		" 25.00

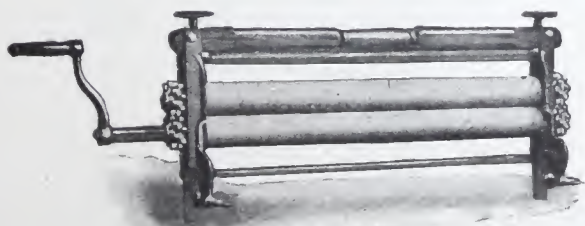
Track for Blue Print Frames.



This is a very practical track arrangement upon which cars may be run out of a window, carrying blue print frames for exposure. In ordering give distance from Floor to the top of Window Sill and Thickness of Wall.

685 Tracks for Frames and Cars, No. 670.....each, \$15.00

Blue Print Wringer.



The revolving Brass Roll guides the print as it passes through the wringer and prevents wrinkling. The frame is made of malleable **IRON**, thoroughly galvanized to prevent rusting. The rubber rolls are of the best quality, especially compounded to preserve the print and dry the paper evenly. A wringer of this kind will pay for its cost in a very short time by the saving of labor and time in drying blue prints. Rollers are 3 inches in diameter.

690 Blue Print Wringers :

	24 in.	30 in.	36 in.	38 in.	44 in.	48 in long
Each.....	\$32.00.....	\$40.00.....	\$45.00.....	\$47.00.....	\$50.00.....	\$55.00

Electric Printing Machines.



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curre
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drop
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This machine is designed to supply the growing demand for a medium priced, well constructed and efficient apparatus for making blue prints and other prints by electric light, at any time during the day or night, regardless of weather conditions.

The machine consists of two heavy pieces of plate glass mounted on a strong stand, which can be placed anywhere, as it is **not necessary to fasten same on wall or on floor**. Height over all is $8\frac{1}{2}$ to 9 feet, and the machine requires a floor space of but $3\frac{1}{2} \times 3\frac{1}{2}$ feet. The shipping weight is 800 to 900 pounds.

The arc lamp furnished with this machine is especially constructed for photo-engraving and blue print work. It is of the long arc construction, transmitting a light rich in actinic or violet rays. Only one lamp is required to do the work, and is furnished to operate on any voltage not exceeding 250 volts. Also on direct or alternating current. A rheostat is furnished with each lamp to adapt it to the desired current.

The speed of the pendulum governing the drop of the lamp through the glass cylinder is easily regulated, thus removing the necessity of making more than one drop of the lamp at a printing, regardless of the condition of the tracing. On making prints from new tracings the lamp should make the drop in about one minute; very old and soiled tracings, two to three minutes.

Perfect contact is obtained by means of the curtains which are attached to rollers held at the end by wire cables, which in turn are held taut by means of iron weights. The rollers will remain stationary at any point, and the curtain back of the roller is always in perfect contact with the glass. This makes it possible to load the machine with numerous small prints at one time and to ascertain the exposure without shifting the prints. That part of the curtain not in use is neatly rolled up and always out of the way of the operator.

Each machine is completely wired ready to connect to the main line. Each machine is thoroughly tested before leaving the factory, and is fully guaranteed to do its work in a perfect and satisfactory manner.

EXPENSE OF OPERATION.—There is no expense connected with its operation other than the cost of carbons for use in the lamp, which amounts to about five cents per one hundred hours, and the cost of the electric current consumed by this one lamp.

DIRECTIONS FOR OPERATING.—To load, roll back the curtain as far as it will go, hold the tracing and sensitized paper in position with the tracing next to the glass, slip the edges under the curtain, then by unrolling the curtain far enough to cover the papers, it is ready to print.

After loading throw the switch to light the lamp and start the pendulum swinging, regulating the speed of the lamp by moving the pendulum weight either up or down the rod.

After the lamp has made the descent, raise it by turning the small crank on the escapement movement.

The pawls should be raised off the ratchet wheel by means of the corded knob when raising the lamp.

To unload, roll the curtain back and lift the paper off the glass.

The print is then ready for the bath.

- | | | |
|-----|--|----------|
| 695 | Frame complete with lamp, makes two prints 42 x 44 in..... | \$220.00 |
| 697 | Frame complete with lamp, makes two prints 42 x 60 in..... | 245.00 |
| 699 | Frame complete with lamp, makes two prints 42 x 72 in..... | 290.00 |

In ordering please state voltage of current, also whether current is direct or alternating.



Profile and Cross Section Papers and Cloth in Rolls.



PLATE A—4 x 20 TO ONE INCH.

- 710 20 inches wide, orange or green.....roll of 50 yards, \$10.00.....yard, \$.24
- 712 20 inches wide, **mounted on Muslin**, orange or green,
roll of 20 yards, \$10.00.....yard, \$.60
- 714 20 inches wide, on transparent paper, printed in orange only,
roll of 50 yards, \$10.00.....yard, \$.24
- 716 20 inches wide, on **transparent cloth**, printed in orange only,
roll of 20 yards, \$12.50.....yard, \$.75
- 717 10 inches wide, orange or greenroll of 50 yards, \$6.25.....yard, \$.15
- 719 10 inches wide, **mounted on muslin**, orange or green,
roll of 20 yards, \$6.75.....yard, . 40



PLATE B—4 x 30 TO ONE INCH.

- 730 20 inches wide, orange or green.....roll of 50 yards, \$10.00.....yard, \$.24
- 732 20 inches wide, **mounted on muslin**, orange or green,
roll of 20 yards, \$10.00.....yard, \$.60
- 734 20 inches wide, on transparent paper, printed in orange only,
roll of 50 yards, \$10.00.....yard, \$.24
- 736 20 inches wide, on **transparent cloth**, printed in orange only,
roll of 20 yards, \$12.50.....yard, \$.75
- 737 9 inches wide, orange or green,.....roll of 50 yards, \$6.25.....yard, \$.15
- 739 9 inches wide, **mounted on muslin**, orange or green,
roll of 20 yards, \$6.75.....yard, \$.40

Profile

750 20

752 20

754 20

756 20

760

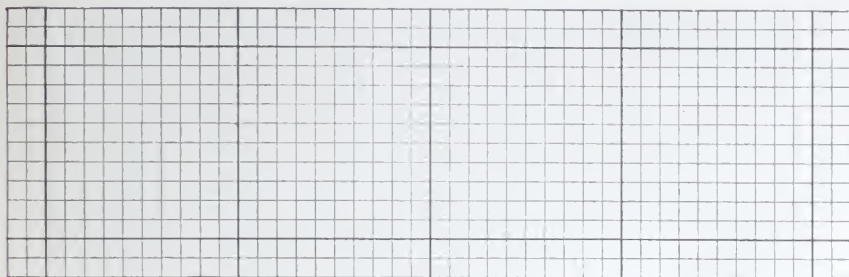
762

764

766

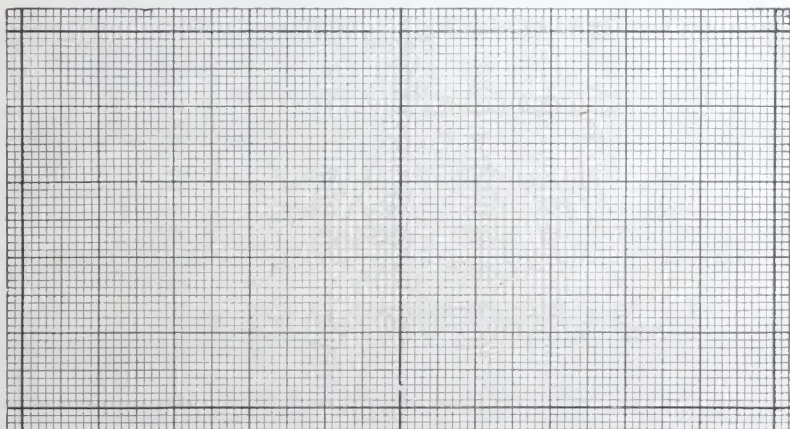


Profile and Cross Section Papers and Cloth in Rolls—Continued.



10 X 10 TO ONE INCH.

- 750 20 inches wide, orange or green.....roll of 50 yards, \$10.00.....yard, \$.24
- 752 20 inches wide, mounted on Muslin, orange or green,
roll of 20 yards, \$10.00.....yard, .60
- 754 20 inches wide, on transparent paper, printed in orange only,
roll of 50 yards, \$10.00.. ..yard, .24
- 756 20 inches wide, on Transparent Cloth, printed in orange only,
roll of 20 yards, \$12.50.....yard, .75

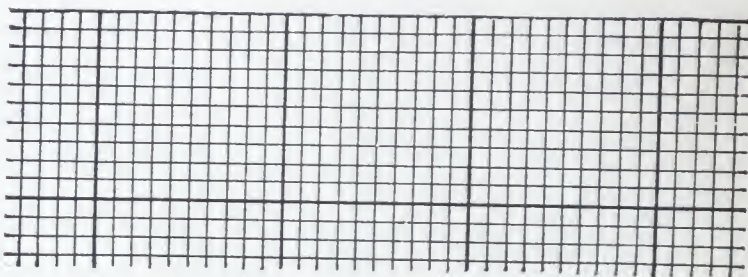


MILLIMETER.

- 760 50 cm. wide, orange or green.....roll of 50 yards, \$10.00.....yard, \$.24
- 762 50 cm. wide, mounted on muslin, orange or green,
roll of 20 yards, \$10.00.....yard, .60
- 764 50 cm. wide, on Transparent Paper, printed in orange only,
roll of 50 yards, \$10.00.....yard, .24
- 766 50 cm. wide, on Transparent Cloth, printed in orange only,
roll of 20 yards, \$12.50.....yard, .75



Engraved Cross Section Papers in Sheets.



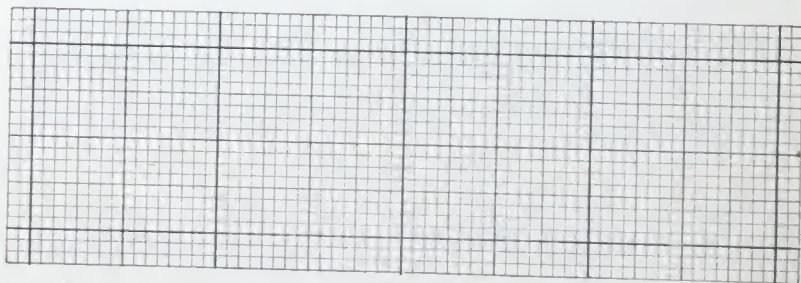
10 X 10 TO ONE INCH.

		Quire	Sheet
770	In sheets, engraving 16 x 20 in., orange or green.....	\$3.50	\$.20
772	In sheets, engraving 16 x 20 in., on transparent paper, printed in orange only.....	3.50	.20



8 X 8 TO ONE INCH.

		Quire	Sheet
775	In sheets, engraving 16 x 20 in., orange or green.....	\$3.50	\$.20
777	In sheets, engraving 16 x 20 in., on transparent paper, printed in orange only.....	3.50	.20



16 X 16 TO ONE INCH.

		Quire	Sheet
780	In sheets, engraving 16 x 20 in., orange or green.....	\$3.50	\$.20
782	In sheets, engraving 16 x 20 in., on transparent paper, printed in orange only.....	3.50	.20



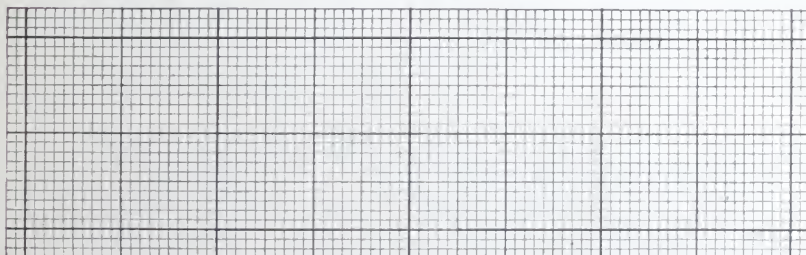
Engraved Cross Section Papers in Sheets—Continued.



5 X 5 TO HALF INCH.

		Quire	Sheet
785	In sheets, engraving 16 x 20 in., orange or green.....	\$3.50	\$.20
787	In sheets, engraving 16 x 20 in., on transparent paper, printed in orange only.....	3.50	.20

Constructors' Cross Section Papers.



10 X 10 TO HALF INCH. EVERY FIFTH LINE HEAVY.

		100 Sheets	Quire
790	In sheets, engraving 5 x 7½ in., on drawing paper, green only...	\$.90	\$.25
791	In sheets, engraving 5 x 7½ in., on tracing paper, orange only...	.90	.25
792	In sheets, engraving 7½ x 10 in., on drawing paper, green only...	1.50	.30
793	In sheets, engraving 7½ x 10 in., on tracing paper, orange only..	1.50	.30

Ruled Cross Section Papers.

EACH INCH LINE HEAVY.

		Quire
795	In sheets, 19 x 24 in., ruled in blue, 10 x 10 to one inch.....	\$1.00
800	In sheets, 19 x 24 in., ruled in blue, 8 x 8 to one inch.....	1.00
805	In sheets, 19 x 24 in., ruled in blue, 5 x 5 to one inch.....	1.00
807	In sheets, 19 x 24 in., ruled in blue, 12 x 12 to one inch.....	1.00

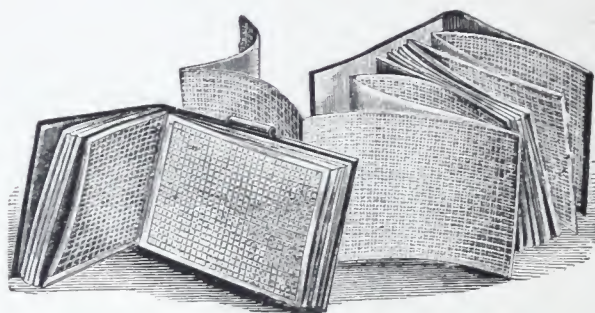
TOPOGRAPHICAL PAPER, 400 FEET TO ONE INCH.

810	In sheets, 16 x 21 in., ruled in blue and red.....	1.00
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Samples of Profile and Cross Section Papers sent free on application.



Profile Books.



Nos. 895-899

Nos. 875-890

These books are made up of continuous Profile Paper mounted on muslin, and are folded like a map so that two facing pages represent a section, or six thousand feet.

- 875 Plate A, 4 x 20 to one inch, printed in green. Size of book about $5\frac{1}{2} \times 8$ in., bound in flexible morocco covers :

	12	25	50	100 miles
Each	\$2.00	\$3.25	\$5.25	\$9.50

- 880 Plate B, 4 x 30 to one inch, printed in green. Size of book about $4\frac{1}{2} \times 8$ in., bound in flexible morocco covers :

	12	25	50	100 miles
Each	\$2.00	\$3.25	\$5.25	\$9.50

- 890 Metric Profile Books, printed in green. Size of book about $6\frac{1}{2} \times 8\frac{1}{2}$ in., bound in flexible morocco covers :

	50	100 leaves
Each	\$5.00	\$8.00

NOT CONTINUOUS.

- 895 Plate A, 4 x 20 to one inch, printed in green. Size of book about 7 x 10 in., bound in stiff morocco covers :

	25	50	100 leaves
Each	\$1.75	\$2.25	\$3.00

- 897 Plate B, 4 x 30 to one inch, printed in green. Size of book about $5\frac{1}{2} \times 9\frac{1}{2}$ in., bound in stiff morocco covers :

	25	50	100 leaves
Each	\$1.75	\$2.25	\$3.00

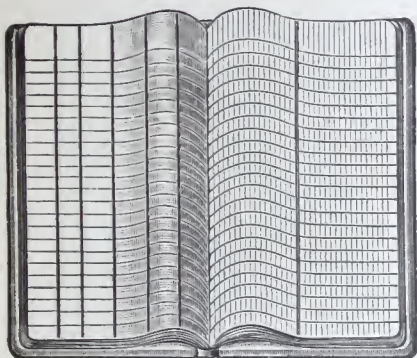
- 899 Metric, in Millimetres, printed in green. Size of book about $6\frac{1}{2} \times 8\frac{1}{2}$ in., bound in stiff morocco covers :

	25	50	100 leaves
Each	\$2.50	\$3.50	\$5.00

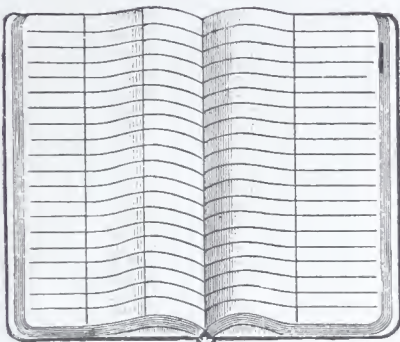
Field, Transit, Level and Cross Section Books.

BOUND IN LEATHER WITH ROUND CORNERS.

Exceptionally Strong Binding.

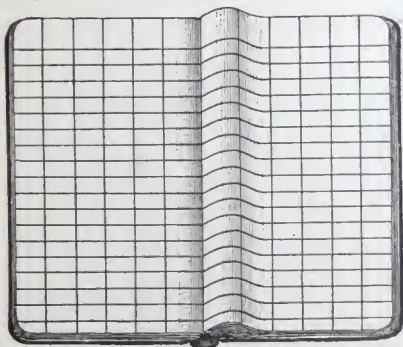


No. 900-901

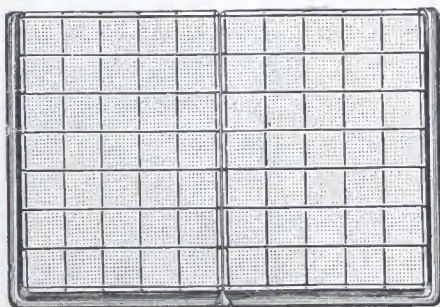


No. 910-911

- | | | |
|-----|--|------------------|
| 900 | Field Book, $4\frac{1}{2} \times 7\frac{1}{2}$ in., 80 leaves..... | per doz., \$5.40 |
| 901 | Field Book, $4\frac{1}{2} \times 7\frac{1}{2}$ in., 60 leaves..... | " 4.50 |
| 910 | Transit Book, $4\frac{1}{2} \times 7\frac{1}{2}$ in., 80 leaves..... | " 5.40 |
| 911 | Transit Book, $4\frac{1}{2} \times 7\frac{1}{2}$ in., 60 leaves..... | " 4.50 |



No. 915-916



No. 920-922

- | | | |
|-----|--|------------------|
| 915 | Level Book, $4 \times 6\frac{1}{2}$ in., 80 leaves..... | per doz., \$5.40 |
| 916 | Level Book, $4 \times 6\frac{1}{2}$ in., 60 leaves..... | " 4.50 |
| 920 | Cross Section Books, $5\frac{1}{2} \times 7\frac{1}{2}$ in., 80 leaves, 10 x 10 to one inch... | " 6.60 |
| 921 | Cross Section Books, $5\frac{1}{2} \times 7\frac{1}{2}$ in., 60 leaves, 10 x 10 to one inch... | " 5.50 |
| 922 | Cross Section Books, $6\frac{1}{2} \times 8\frac{1}{2}$ in., 80 leaves, 10 x 10 to one inch... | " 9.50 |

Special Books made to order at short notice.

Field Book Pencil, see list of pencils.

Field Book Rule, see list of Surveyors' Accessories.



DRAWING INSTRUMENTS.

To facilitate the selection of Drawing Instruments, we have listed only such Instruments which have actually stood the test of the profession for many years.

For professional use we recommend the **Genuine Swiss Instruments**, made by Kern & Co., Aarau, Switzerland. They are the best and most reliable in the market, and allow of the very finest adjustment.

In **German Instruments**, of which there are various grades made, we list principally the very best made in Germany, and purposely omit such styles which require too fine an adjustment to be of practical value in a cheaper grade.

These styles of German Instruments, which we list in this catalogue, can therefore be recommended to anyone who wishes to have a good, reliable instrument without going to the expense of the highest priced goods. They are used by many professionals, also by students of technical schools, etc.

For the accommodation of our customers, we have made arrangements with a trained instrument maker to repair such parts of instruments which are liable to get out of order, or which through constant use may from time to time need re-grinding, re-adjusting, etc., and give below a list of repairs which mostly occur :

LIST OF REPAIRS.

Sharpening Ruling Pens.....	\$.15
Grinding and Sharpening Ruling Pens.....	.25
Sharpening and Polishing Ruling Pens.....	.30
Grinding, Sharpening and Polishing Ruling Pens.....	.40
Re-Fitting Broken Handles in Ruling Pens.....	.10
Aluminum Handles for Ruling Pens.....	.35
Ebony or Ivory Handles for Ruling Pens.....	.25
New Nut and Thread for Spring Bows.....	.35
New Nut for Spring Bows.....	.20
New Screws.....	.15
Re-Pointing Divider Points.....	.25
Joint Screws.....	.25
Polishing Dividers (either large or small).....	.15
Polishing Attachments (either large or small).....	.10
Polishing Spring Bows (either large or small).....	.25
Swiss Shouldered Needle Points, properly fitted.....each	.15
German Shouldered Needle Points, properly fitted.....	.10

Swiss Parts for Swiss Drawing Instruments :

Pen Points, Pencil Points, Needle Points for $3\frac{1}{2}$ in. Compasses.....each,	\$1.25
Pen Points, Pencil Points, Needle Points for 5 in. Compasses.....	1.60
Lengthening Bars for $3\frac{1}{2}$ in., or 5 in. Compasses.....	1.35

German Parts for German Drawing Instruments :

Pen Points, Pencil Points, Needle Points for $3\frac{1}{2}$ in. Compasses.....each,	\$1.00
Pen Points, Pencil Points, Needle Points for 5 in. Compasses.....	1.25
Lengthening Bars for $3\frac{1}{2}$ in., or 5 in. Compasses.....	1.15

REMARKS : In **Sharpening or Grinding Pens** we do not remove old ink with benzine or turpentine, but clean them carefully on the inner and outer edges with emery paper, thus insuring an easy flow of ink.

Grinding Pens, we refer to pens slightly broken off, or points which are in such condition as to require re-shaping.

Kern's Swiss Ruling Pens.

Kern's Ruling Pens are the finest and most reliable in the market. The blades are made of extra hardened English Steel, and are warranted to be of first-class workmanship and accurate in every respect.



1000	Swiss Ruling Pen, $4\frac{1}{2}$ in., upper blade with spring, Ebony Handle..each,	\$1.10
1001	" " 5 " " " " " " " " " " " " " " " "	1.20
1002	" " $5\frac{1}{2}$ " " " " " " " " " " " " " " " "	1.35
1003	Case containing Ruling Pens Nos. 1000, 1001 and 1002.....	5.00
1005	Swiss Ruling Pen, $4\frac{1}{2}$ in., same as No. 1000, Aluminum Handle.....	1.25
1006	" " 5 " " " 1001, " " " " " " " " " " " "	1.35
1007	" " $5\frac{1}{2}$ " " " 1002, " " " " " " " " " " " "	1.50
1008	Case containing Ruling Pens Nos. 1005, 1006 and 1007.....each,	5.50



1013

1010	Swiss Ruling Pen, 4 in., with Joint, Ivory Handle.....	each,	\$1.40
1011	" " 4 ³ / ₄ " " " " " and Pin.....	"	1.60
1012	" " 5 ¹ / ₂ " " " " " " " "	"	1.80
1013	" " 6 ¹ / ₂ " " " " " " " "	"	2.00
1015	" " 4 " same as No. 1010, Aluminum Handle	"	1.55
1016	" " 4 ³ / ₄ " " " " 1011, " " " "	"	1.75
1017	" " 5 ¹ / ₂ " " " " 1012, " " " "	"	1.95
1018	" " 6 ¹ / ₂ " " " " 1013, " " " "	"	2.15

Kern's Swiss Ruling Pens.



Kern's Patent Lever Pens. These pens have a spring on the upper blade, and by means of the movable lever, as shown in cut, can be rapidly opened for cleaning. When lever is brought back to its original position the blades of the pen are closed to the same sized line as before, thus saving considerable time and annoyance:

1020	Patent Lever Pen, $\frac{1}{2}$ in., Ebony Handle.....	each,	\$1.60
1021	“ “ 5 “ “ “	“	1.70
1022	“ “ $5\frac{1}{2}$ “ “ “	“	1.85
	Aluminum handles.....	extra,	.15

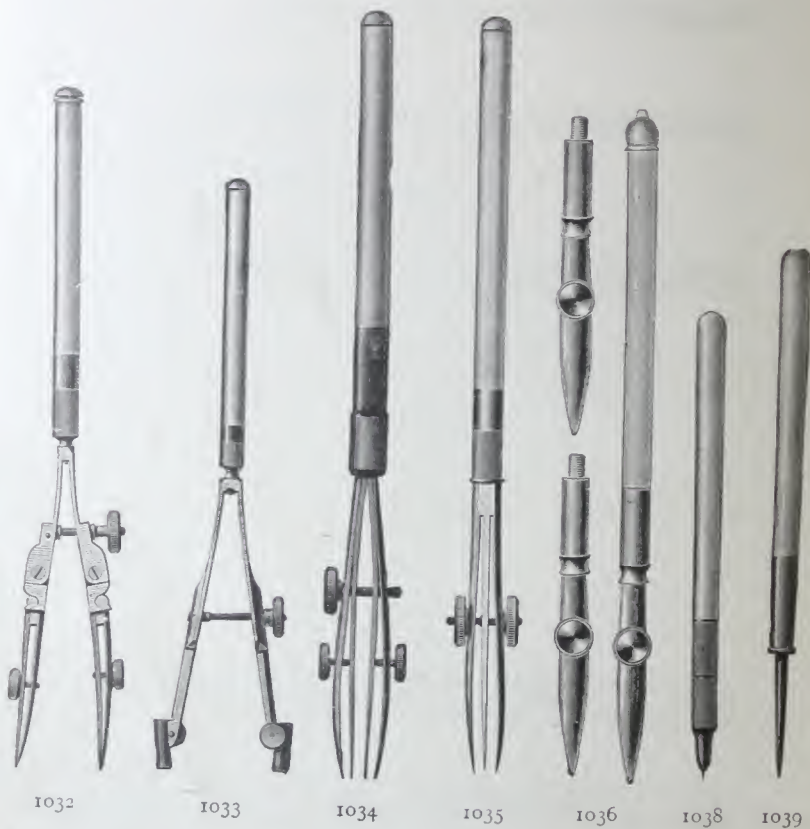


1027

1025	Detail Ruling Pen, 5 in., upper blade with spring, Ebony Handle, each,	\$1.60
1026	" " 6 " " " " " " " " " "	1.70
1027	" " 7 " " " " " " " " " "	1.80
1028	" " 5 " same as No. 1025, Aluminum Handle...	1.80
1029	" " 6 " " " 1026, " " ... "	1.90
1030	" " 7 " " " 1027, " " ... "	2.00



Kern's Railroad and Borders Pens, etc.

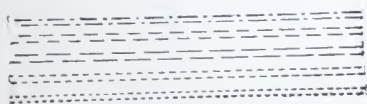


- | | | |
|------|---|--------|
| 1032 | Swiss Railroad Pen, $5\frac{1}{2}$ in., joints to blades and in shanks. Improved construction, both pens bent in the same direction. Ivory Handle.....each, | \$3.75 |
| 1033 | Swiss Railroad Pencil, $5\frac{1}{2}$ in., Ivory Handle..... | " 3.25 |
| 1034 | Swiss Border Pen, for broad lines, Ivory Handle..... | " 3.50 |
| 1035 | " " " " " " " " | " 3.00 |
| 1036 | Swiss Hatching Pen, $5\frac{1}{2}$ in., 3 blades to 1 handle..... | " 2.60 |
| 1037 | " " " No. 1036, in case..... | " 3.60 |
| 1038 | Swiss Pricker, Ivory Handle..... | " 1.25 |
| 1039 | Swiss Tracer, " " | " 1.00 |

Kern's Swiss Dotting Pens.

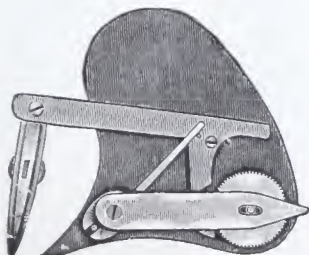
- 1040 Universal Dotting Pen, $4\frac{3}{4}$ in., with milled Aluminum Handle.....each, \$6.50
- 1041 Universal Dotting Pen, in morocco pocket caseeach, 7 50

This novel pen embodies an improvement which certainly will be welcomed by anyone whose occupation involves the drawing of dotted lines. Every part is made of rolled German silver except the pen, which is of tempered steel. No interchange of wheels is necessary to obtain different lines, and curved or straight dotted lines of different thicknesses can be produced with the greatest rapidity. The pen is linged so that it may be swung clear (see dotted lines in illustration) for filling and cleaning. The five dotting wheels are all assembled on a common axis, and a full turn of the thumb-screw (shown in illustration), either to the right or left, disengages one wheel and engages the next. Always hold pen in a vertical position.



Five styles of dotted lines which can be produced with this pen.

- 1045 Swiss Dotting Instrument with 3 wheels, in case.....each, \$5.50



1045

- 1046 Swiss Dotting Pen, 6 in., with 6 wheels and reservoir for ink, ivory handle.....each, \$4.25



- 1047 Swiss Dotting Pen, 6 in., with 6 wheels, ivory handle.....each, \$3.75





Kern's Swiss Dividers and Compasses with Pivot Joints.



Sectional view of pivot-jointed head.



1050



1052



1055



1056



1060



1062



1065

Kern's Swiss Instruments are the finest and most reliable in the market. They are made of hard-rolled German silver and best English steel, and are warranted to be of first class workmanship and accurate in every respect.

1050	Swiss Plain Dividers, $3\frac{1}{2}$ in.....	each, \$2.35
1052	Swiss Hair Spring Dividers, $3\frac{1}{2}$ in.....	" 3.35
1055	Swiss Compasses, $3\frac{1}{2}$ in., fixed needle and pencil point.....	" 4.00
1056	Swiss Compasses, $3\frac{1}{2}$ in., fixed needle and pen point.....	" 4.10
1060	Swiss Compasses, $3\frac{1}{2}$ in., fixed needle, pen and pencil points.....	" 5.50
1062	Swiss Compasses, $3\frac{1}{2}$ in., pen, pencil, needle point and divider points,	" 6.80

They
to be

1065

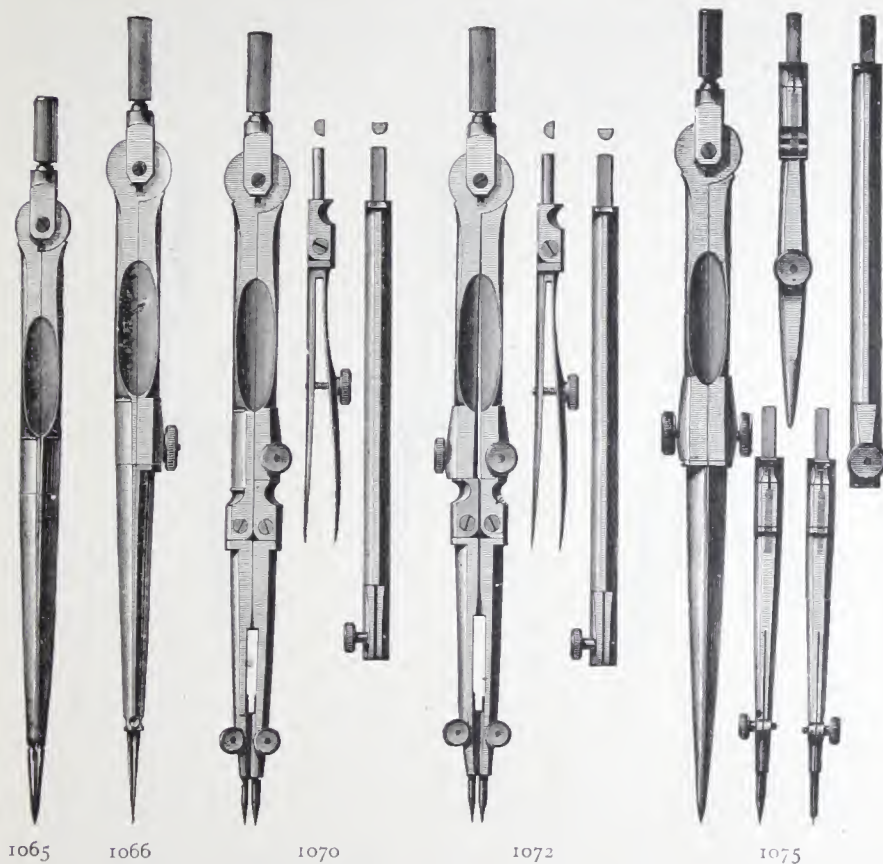
1066

1070

1072

1075

Kern's Swiss Dividers and Compasses with Pivot Joints.



Kern's Swiss Instruments are the finest and most reliable in the market. They are made of hard-rolled German silver and best English steel, and are warranted to be of first-class workmanship and accurate in every respect.

1065	Swiss Plain Dividers, 5 in.....	each, \$2.80
1066	Swiss Hair Spring Dividers, 5 in.....	" 3.80
1070	Swiss Compasses, 5½ in., fixed needle, pen, pencil points and lengthening bar.....	" 7.50
1072	Swiss Compasses, 5½ in., same as 1070, but hair spring attachment on needle point leg.....	" 8.75
1075	Swiss Compasses, 5½ in., with pen, pencil, needle points, lengthening bar and divider points.....	" 10.00



Kern's Swiss Bow Instruments.

Kern's Swiss Bow Instruments are the finest and most reliable in the market. They are made of extra tempered English steel, and are warranted to be of first-class workmanship and accurate in every respect.



1080



1081



1082

- | | | | |
|------|--|------|---------|
| 1080 | Swiss Bow Spacer, $3\frac{1}{2}$ in., center screw adjustment..... | each | \$ 2.25 |
| 1081 | Swiss Bow Pen, $3\frac{1}{2}$ in., center screw adjustment..... | " | 3.00 |
| 1082 | Swiss Bow Pencil, $3\frac{1}{2}$ in., center screw adjustment..... | " | 3.00 |
| 1083 | Swiss Bow Instruments, Nos. 1080-1082, in case..... | " | 10.00 |



- | | | | |
|------|---|-------|--------|
| 1085 | Swiss Self-adjusting Bow Pen, for very small circles..... | each, | \$3.25 |
| 1086 | Swiss Self-adjusting Bow Pen, in case..... | " | 4.25 |



- | | | | |
|------|---|-------|--------|
| 1088 | Swiss Self-adjusting Bow Pen and Pencil..... | each, | \$4.50 |
| 1089 | Swiss Self-adjusting Bow Pen and Pencil, in case..... | " | 5.50 |

Kern's Swiss Bow Instruments — Continued.

Kern's Swiss Bow Instruments are the finest and most reliable in the market. They are made of extra tempered English steel, and are warranted to be of first-class workmanship and accurate in every respect.



1090



1091



1092

- | | | |
|------|--|--------------|
| 1090 | Swiss Bow Spacer, $3\frac{1}{2}$ in., metal handle..... | each, \$2.00 |
| 1091 | Swiss Bow Pen, $3\frac{1}{2}$ in., metal handle, with spring on upper blade... " | 2.50 |
| 1092 | Swiss Bow Pencil, $3\frac{1}{2}$ in., metal handle..... | 2.50 |
| 1093 | Swiss Bow Instruments, Nos. 1090-1092, in case..... | " 8.00 |

Extra Large Bows.

- | | | |
|------|---|--------------|
| 1105 | Swiss Bow Spacer, $4\frac{3}{4}$ in., metal handle..... | each, \$2.40 |
| 1106 | Swiss Bow Pen, $4\frac{3}{4}$ in., metal handle..... | " 3.25 |
| 1107 | Swiss Bow Pencil, $4\frac{3}{4}$ in., metal handle..... | " 3.25 |
| 1108 | Swiss Bow Instruments, Nos. 1105-1107, in case..... | " 10.15 |

Kern's Swiss Bow Instruments—Continued.



1110



1111



1112

- | | | |
|------|---|--------------|
| 1110 | Swiss Bow Spacer, $3\frac{1}{2}$ in., ivory handle..... | each, \$2.00 |
| 1111 | Swiss Bow Pen, $3\frac{1}{2}$ in., ivory handle..... | " 2.50 |
| 1112 | Swiss Bow Pencil, $3\frac{1}{2}$ in., ivory handle.. | " 2.50 |
| 1113 | Swiss Bow Instruments, Nos. 1110-1112, in case..... | " 7.90 |



1115



1116



1117



1118

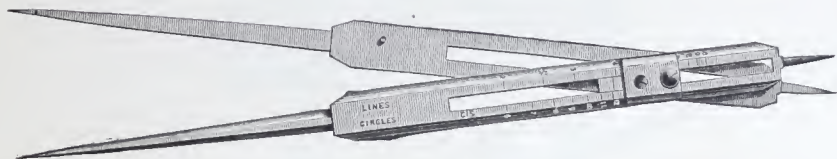


1119

- | | | |
|------|--|--------------|
| 1115 | Swiss Bow Spacer, $2\frac{1}{2}$ in., metal handle..... | each, \$1.75 |
| 1116 | Swiss Bow Pen, $2\frac{1}{2}$ in., metal handle..... | " 2.25 |
| 1117 | Swiss Bow Pencil, $2\frac{1}{2}$ in., metal handle..... | " 2.25 |
| 1118 | Swiss Bow Pen, $2\frac{1}{2}$ in., metal handle..... | " 2.50 |
| 1119 | Swiss Bow Pencil, $2\frac{1}{2}$ in., metal handle..... | " 2.50 |
| 1121 | Swiss Bow Instruments, Nos. 1115-1117, in case..... | " 7.25 |
| 1122 | Swiss Bow Instruments, Nos. 1115, 1118, 1119, in case..... | " 7.75 |

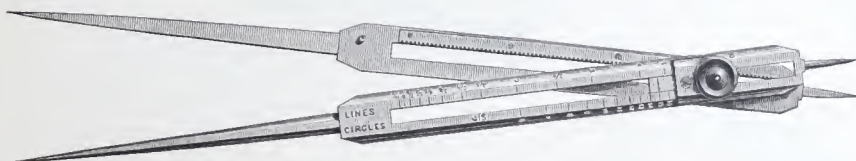
Kern's Swiss Proportional Dividers.

Kern's Swiss Proportional Dividers are the finest and most reliable in the market. They are made of hard-rolled German silver and best English steel, and are warranted to be of first-class workmanship and accurate in every respect.



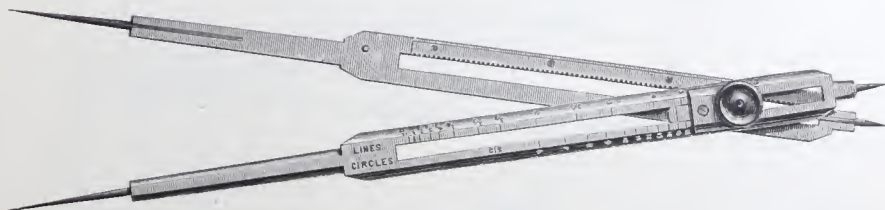
1125

- 1125 Swiss Proportional Dividers, $7\frac{1}{2}$ in., finely divided for lines and circles, each, \$10.00
 1126 Swiss Proportional Dividers, No. 1125, in morocco case..... " 11.00



1130

- 1130 Swiss Proportional Dividers, $8\frac{1}{2}$ in., finely divided for lines and circles, with rack movement.....each, \$12.50
 1131 Swiss Proportional Dividers, No. 1130, in morocco case..... " 13.50



1135

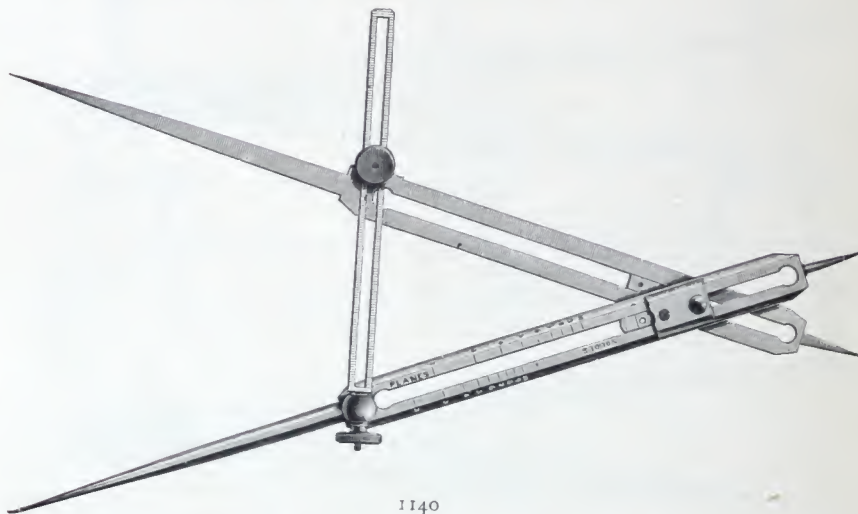
- 1135 Swiss Proportional Dividers, 9 in., finely divided for lines and circles, with rack movement and movable points.....each, \$15.00
 1136 Swiss Proportional Dividers, No. 1135, in morocco case..... " 16.10

(The points of Proportional Dividers No. 1135 are held by screws for the purpose of readjusting them in case of breakage).



Kern's Swiss Proportional Dividers Continued.

Kern's Swiss Proportional Dividers are the finest and most reliable in the market. They are made of hard-rolled German silver and best English steel, and are warranted to be of first-class workmanship and accurate in every respect.



1140

- 1140 Swiss Proportional Dividers, 9 in., finely divided for lines, circles, planes and solids, with micrometer adjustment each, \$16.50
 1141 Proportional Dividers, No. 1140, in morocco case 18.00



1145

Kern's Improved Proportional Dividers are graduated in such a manner that by the aid of a table furnished with each instrument, any desired proportion may be speedily and accurately set off. Divisions, by means of a vernier, read to 1,000 parts.

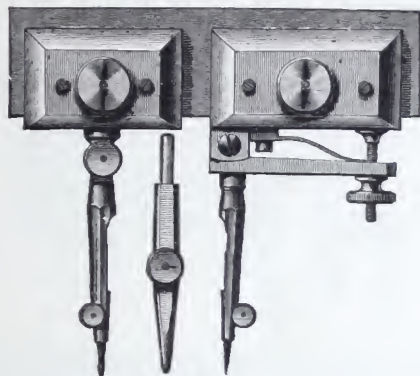
- 1145 Kern's Improved Proportional Dividers, 10 in., with rack movement and adjustable points, with table of settings each, \$16.50
 1146 Kern's Improved Proportional Dividers, No. 1145, in morocco case, " 17.50

1150
1151
1152
1153

1155
1156
1157
1158

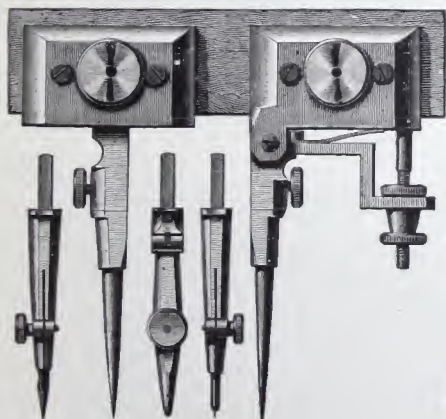
Kern's Swiss Beam Compasses.

Kern's Swiss Beam Compasses are the finest and most reliable in the market. They are made of hard-rolled German silver and best English steel, and warranted to be of first class workmanship and accurate in every respect.

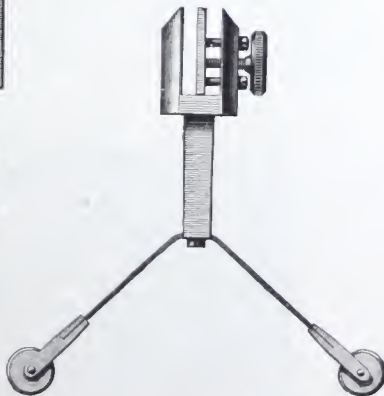


1150

- | | | | |
|------|--|-------------|--------|
| 1150 | Swiss Beam Compasses..... | each, | \$7.50 |
| 1151 | Swiss Beam Compasses, No. 1150, in case..... | " | 8.75 |
| 1152 | Swiss Wheel Attachment for Beam Compasses No. 1150..... | " | 2.25 |
| 1153 | Swiss Beam Compasses, No. 1150 and attachment No. 1152, in case, | each, 11.50 | |



1155



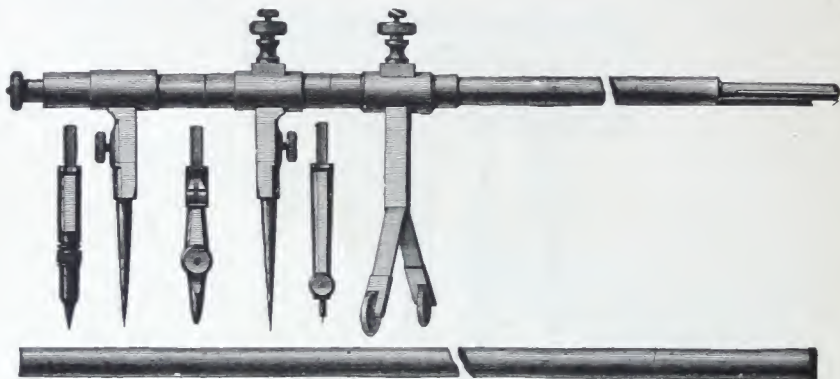
1157

- | | | | |
|------|---|-------------|--------|
| 1155 | Swiss Beam Compasses..... | each, | \$9.00 |
| 1156 | Swiss Beam Compasses No. 1155, in case..... | " | 10.25 |
| 1157 | Swiss Wheel Attachment for Beam Compasses No. 1155..... | " | 2.25 |
| 1158 | Swiss Beam Compasses No. 1155 and wheel attachment No. 1157, in case, | each, 13.00 | |



Kern's Swiss Beam Compasses—Continued.

Kern's Swiss Beam Compasses are the finest and most reliable in the market. They are made of hard-rolled German silver and best English steel, and warranted to be of first-class workmanship and accurate in every respect.



1160	Swiss Tubular Beam Compasses, 24 in. (3 bars)	each, \$11.75
1161	Swiss Tubular Beam Compasses, No. 1160, in case.....	" 13.50
1165	Swiss Tubular Beam Compasses, 36 in. (3 bars)	" 15.25
1166	Swiss Tubular Beam Compasses, No. 1165, in case.....	" 17.50
1168	Wheel Attachments for No. 1160 or 1165.....	" 2.75
1170	Swiss Tubular Beam Compasses No. 1160 and Wheel Attachment No. 1168, in case.....	16.25
1171	Swiss Tubular Beam Compasses No. 1165 and Wheel Attachment No. 1168, in case.....	each, 20.50

Beam Compass Bars.



Style A



Style B

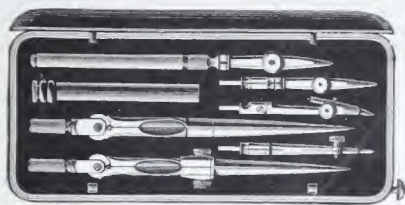
1172 Beam Compass Bars of hardwood :

	24	30	36	42	48	60 in.
Each.....	\$.25	.30	.35	.40	.50	.65

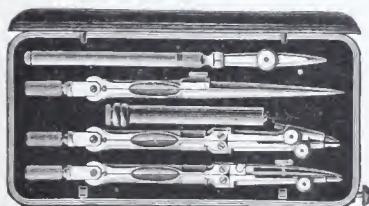
Unless otherwise ordered, we furnish Beam Compass Bars Style A.

Kern's Swiss Drawing Sets in Pocket Cases.

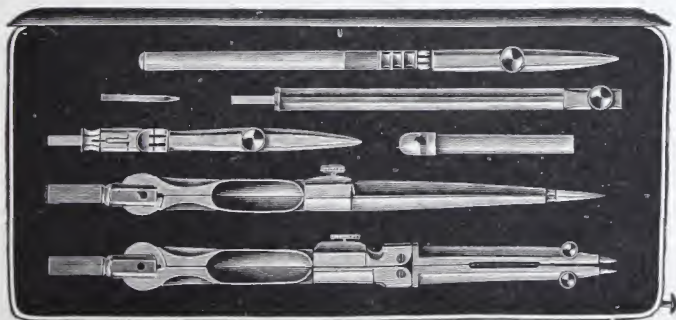
Kern's Swiss Instruments are the finest and most reliable in the market. They are made of hard-rolled German Silver and best English steel, and are warranted to be of first-class workmanship and accurate in every respect. The sets are put up in neat, substantial, morocco covered pocket cases, lined with silk velvet.



- 1175 { Swiss Compasses, No. 1062
Swiss Plain Dividers, No. 1050.....
Swiss Ruling Pen, No. 1010..... } in case, each, \$12.75



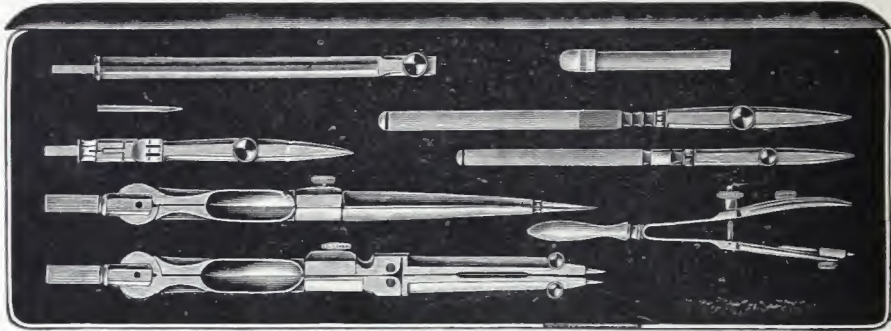
- 1180 { Swiss Pencil Compasses, No. 1055.....
Swiss Pen Compasses, No. 1056.....
Swiss Hair Spring Divider, No. 1052.....
Swiss Ruling Pen, No. 1010..... } in case, each, \$15.15



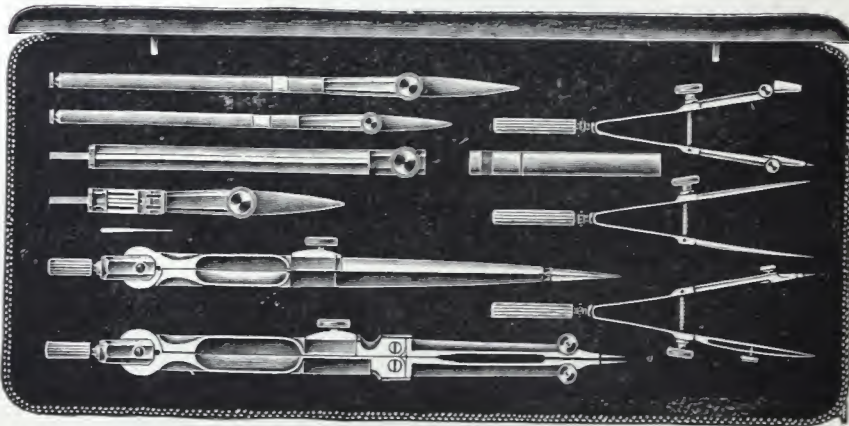
- 1185 { Swiss Compasses, No. 1070.....
Swiss Hair Spring Divider, No. 1066.....
Swiss Ruling Pen, No. 1012..... } in case, \$15.50



Kern's Swiss Drawing Sets in Pocket Cases—Continued.



- 1190 { Swiss Compasses, No. 1070.....
 Swiss Hair Spring Divider, No. 1066.....
 Swiss Bow Pen, No. 1111.....
 Swiss Ruling Pens, Nos. 1010 and 1012..... } in case, \$19.75



- 1195 { Swiss Compasses, No. 1070.....
 Swiss Hair Spring Divider, N. 1066.....
 Swiss Bow Instruments, Nos. 1090-1092.....
 Swiss Ruling Pens, Nos. 1000 and 1001..... } in case, \$23.00
- 1196 Same set as 1195, but with Ruling Pens with ivory handles, Nos. 1010 and 1012, in case..... each, \$24.00
- 1197 Same set as 1195, but with Ruling Pens with aluminum handles, Nos. 1005 and 1006, in case..... each, 23.50
- 1198 Same set as 1195, but with Patent Lever Pens, Nos. 1020 and 1021, " 24.00
- 1199 Same set as 1195, but with Hair Spring Compasses, No. 1072..... " 24.25



Kern's Swiss Drawing Sets in Pocket Folding Cases.

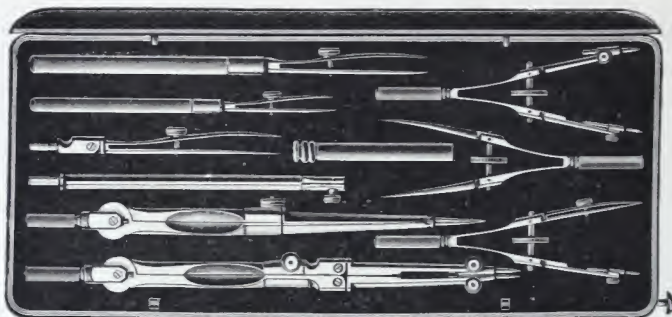


FOLDING CASE, WHEN CLOSED.

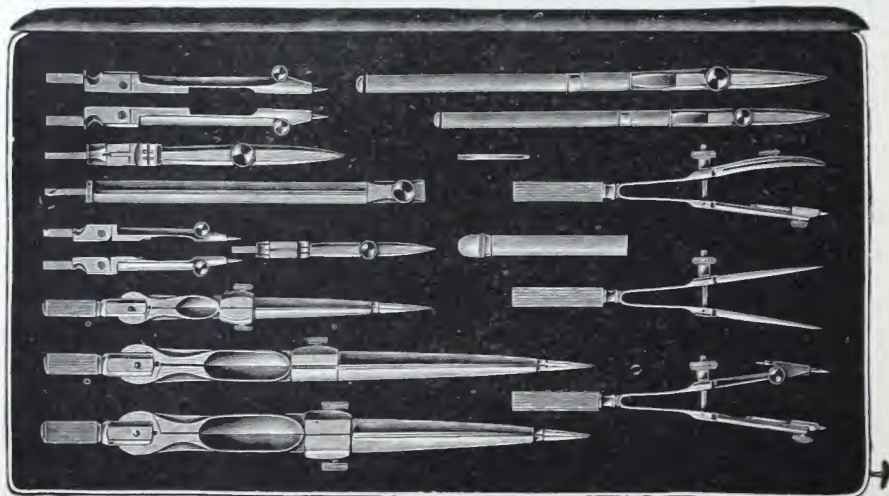


- | | |
|------|---|
| 1200 | <div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>Swiss Compasses, No. 1070</p> <p>Swiss Hair Spring Divider, No. 1066.....</p> <p>Swiss Bow Instruments, Nos. 1090-1092.....</p> <p>Swiss Ruling Pens, Nos. 1000 and 1001.....</p> </div> <div style="font-size: 3em; margin: 0 10px;">}</div> <div> <p>in case, \$24.00</p> </div> </div> |
| 1201 | Same set as No. 1200, but with Ruling Pens, ivory handles, Nos. 1010 and 1012, in case.....each, \$25.00 |
| 1202 | Same set as No. 1200, but with Ruling Pens with aluminum handles, Nos. 1005 and 1006, in case....." 24.50 |
| 1203 | Same set as No. 1200, but with Patent Lever Pens, Nos. 1020 and 1021, in case....." 25.00 |
| 1204 | Same set as No. 1200, but with Hair Spring Compasses, No. 1072, in case....." 25.25 |
| 1205 | Same set as No. 1204, but with ivory handle Pens, Nos. 1010 and 1012, in case....." 26.25 |

Kern's Swiss Drawing Sets in Pocket Cases.

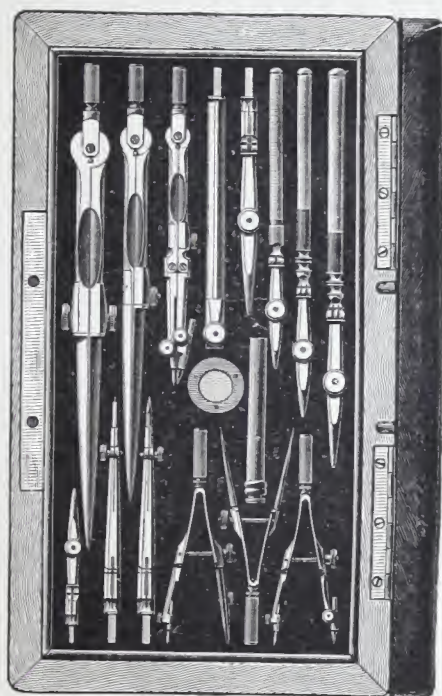


- 1210 { Swiss Compasses, No. 1070.....
 Swiss Hair Spring Divider, No. 1066.....
 Swiss Bow Spacer, with center screw, No. 1080....
 Swiss Bow Pen, with center screw, No. 1081.....
 Swiss Bow Pencil, with center screw, No. 1082.....
 Swiss Ruling Pen, aluminum handle, No. 1005.....
 Swiss Ruling Pen, aluminum handle, No. 1006..... } in case, each, \$24.00
- 1212 Same set as No. 1210, but with Pens, Nos. 1000 and 1001, in case..each, \$23.50
- 1213 Same set as No. 1210, but with Pens, Nos. 1020 and 1021, in case.. “ 25.00



- 1215 { Swiss Compasses, No. 1075.....
 Swiss Compasses, No. 1062.....
 Swiss Hair Spring Divider, No. 1066.....
 Swiss Bow Instruments, Nos. 1090-1092.....
 Swiss Ruling Pens, Nos. 1000 and 1001..... } in case, each, \$33.50
- 1218 Same set as No. 1215, but with Pens, Nos. 1010 and 1012, in case, each, \$34.50

Kern's Swiss Drawing Sets in Polished Wood Cases.

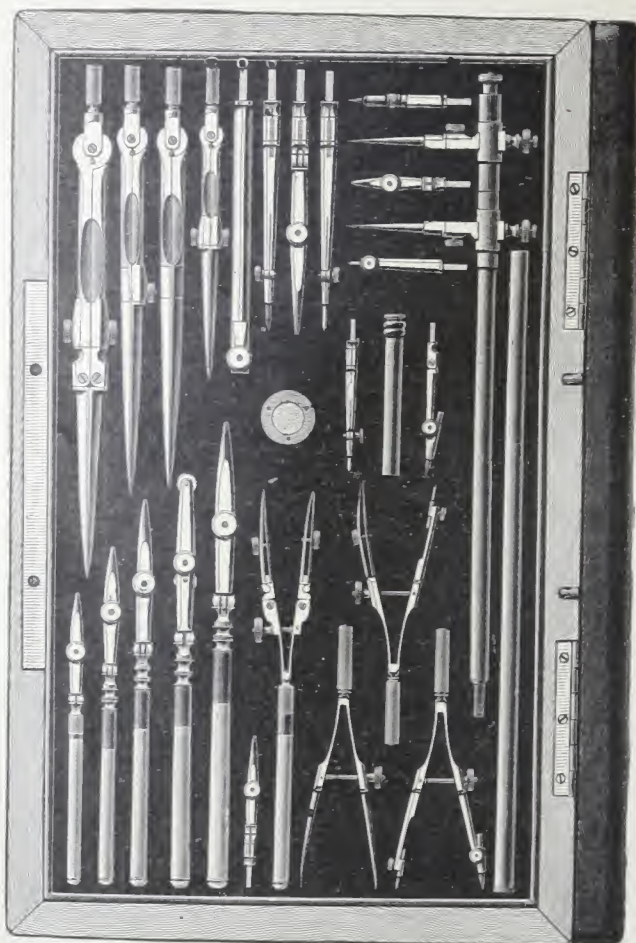


1220	{ <ul style="list-style-type: none"> Swiss Compasses, $5\frac{1}{2}$ in., No. 1075..... Swiss Hair Spring Divider, 5 in., No. 1066..... Swiss Compasses, $3\frac{1}{2}$ in., No. 1060..... Swiss Bow Instruments, Nos. 1090-1092..... Swiss Ruling Pens, Nos. 1010, 1011 and 1012..... Horn Center, with German silver edge..... }	in case, each, \$44.50
------	--	------------------------

Above in fine polished wooden box, with lock and tray,



Kern's Swiss Drawing Sets in Polished Wood Cases— Continued.

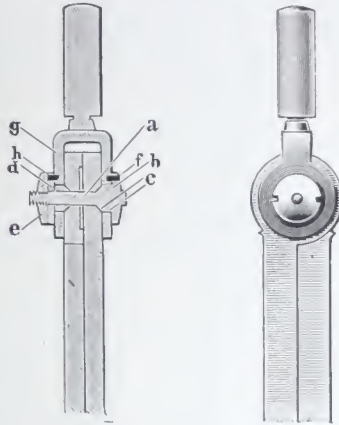


1225

- | | |
|---|--------------------------|
| Swiss Compasses, $5\frac{1}{2}$ in., No. 1075..... | } in case, each, \$78.75 |
| Swiss Hair Spring Divider, 5 in., No. 1066..... | |
| Swiss Plain Divider, 5 in., No. 1065..... | |
| Swiss Compasses, $3\frac{1}{2}$ in., No. 1062..... | |
| Swiss Bow Instruments, Nos. 1090-1092..... | |
| Swiss Ruling Pens, Nos. 1010, 1011, 1012 and 1013.. | |
| Swiss Dotting Pen, No. 1046..... | |
| Swiss Railroad Pen, improved, No. 1032..... | |
| Swiss Tubular Beam Compass, 18 in..... | |
| Swiss Horn Center, with German silver edge | |

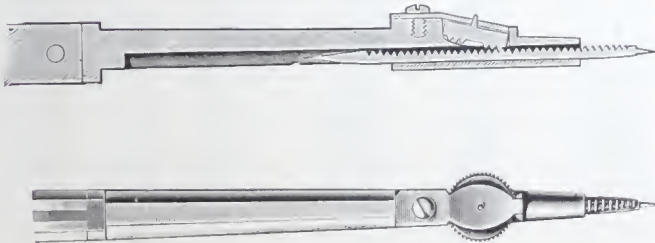
Above in fine polished wood case, with lock and tray.

Kern's Improved Pivot Joint, Patented.



This joint is an improvement over the pivot joints used heretofore, inasmuch as it can be tightened to any desired degree of stiffness without straining the joint.

Kern's Patent Needle Point.

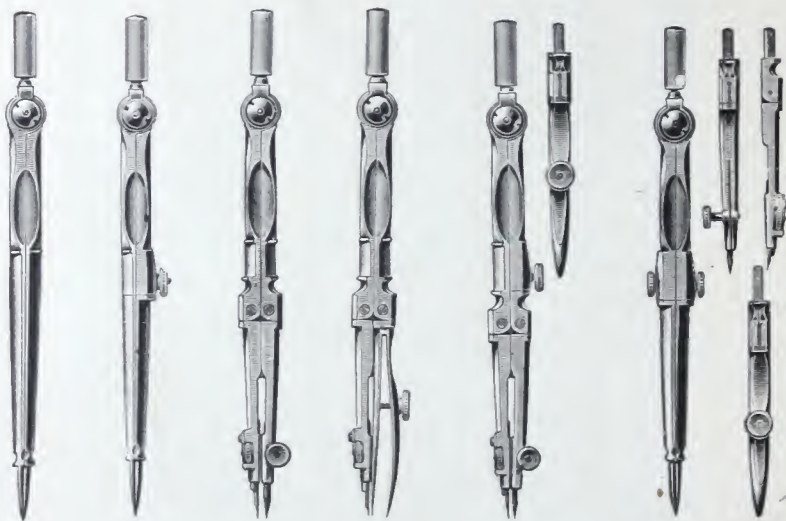


When describing circles, it is very essential to adjust the needle point and the pencil or pen point to exactly the same length, especially in circles of a small radius. To obtain this accurate adjustment, the "Patent Needle Point" as illustrated above has been constructed. The needle point is toothed, and is adjusted by means of a small plate, in one surface of which a spiral is cut. This plate is placed on the needle in such a way that it engages three teeth of the needle and thereby holds the same firmly in place. The advantages of this "Patent Needle" may be summarized as follows:

- 1 Unusually fine adjustment.
- 2 No time lost in adjusting the needle.
- 3 Impossible to lose the needle or screws.
- 4 No wear to the needle or other parts, as the needle and spiral are made of hardened steel.



Kern's Swiss Dividers and Compasses
with
Improved Pivot Joint
and
Patent Needle Points.



1250

1252

1255

1256

1260

1262

1250	Swiss Plain Dividers, $3\frac{1}{2}$ in.	each, \$2.60
1252	Swiss Hair Spring Dividers, $3\frac{1}{2}$ in.	" 3.60
1255	Swiss Compasses, $3\frac{1}{2}$ in., fixed needle and pencil point.....	" 4.65
1256	Swiss Compasses, $3\frac{1}{2}$ in., fixed needle and pen point.....	" 4.65
1260	Swiss Compasses, $3\frac{1}{2}$ in., fixed needle, pen and pencil points.....	" 6.15
1262	Swiss Compasses, $3\frac{1}{2}$ in., pen, pencil, needle and divider points.....	" 7.65



1265

1265

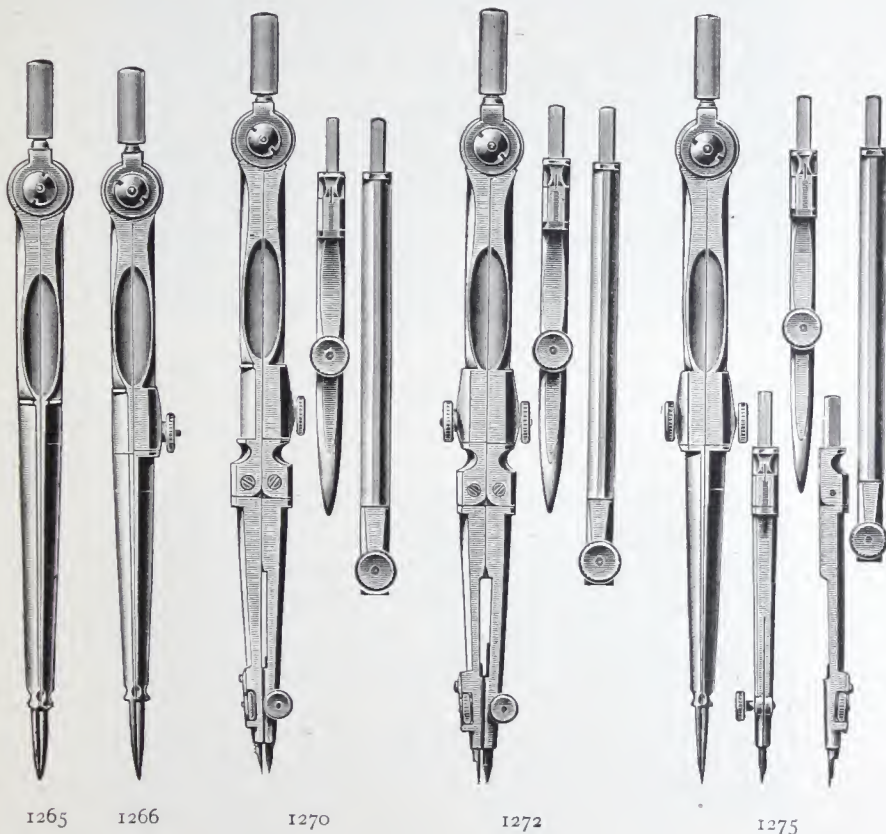
1266

1270

1272

1275

Kern's Swiss Dividers and Compasses, with Improved Pivot Joints and Patent Needle Points.



1265	Swiss Plain Dividers, 5 in.....	each, \$3.05
1266	Swiss Hair Spring Dividers, 5 in.....	" 4.05
1270	Swiss Compasses, 5½ in., fixed needle, pen, pencil points and lengthening bar.	" 8.25
1272	Swiss Compasses, 5½ in., same as 1270, but hair spring attachment on needle point leg.....	" 9.50
1275	Swiss Compasses, 5½ in., with pen, pencil, needle points, lengthening bar and divider points.....	" 10.00



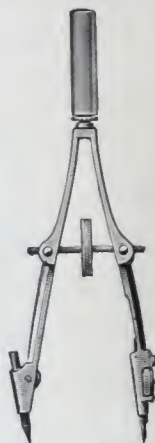
Kern's Swiss Bow Instruments, with Patent Needle.



1280



1281



1282

- | | | | |
|------|--|-------|--------|
| 1280 | Swiss Bow Spacer, $3\frac{1}{2}$ in., centre screw adjustment..... | each, | \$2.25 |
| 1281 | Swiss Bow Pen, $3\frac{1}{2}$ in., " " " and patent needle, " | " | 3.50 |
| 1282 | Swiss Bow Pencil, $3\frac{1}{2}$ in., " " " " " " " | " | 3.50 |
| 1283 | Swiss Bow Instruments, Nos. 1280-1282, in case..... | " | 11.00 |



1290



1291

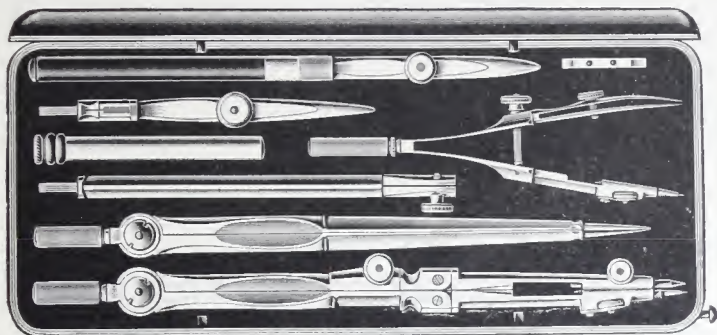


1292

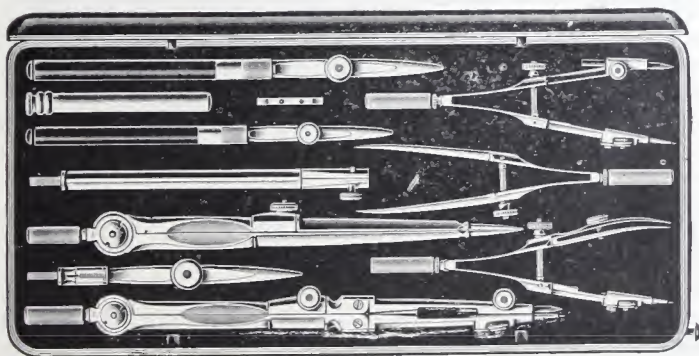
- | | | | |
|------|---|-------|--------|
| 1290 | Swiss Bow Spacer, $3\frac{1}{2}$ in., metal handle..... | each, | \$2.00 |
| 1291 | Swiss Bow Pen, $3\frac{1}{2}$ in., " " " and patent needle..... | " | 3.25 |
| 1292 | Swiss Bow Pencil, $3\frac{1}{2}$ in., " " " " " " " | " | 3.25 |
| 1293 | Swiss Bow Instruments, Nos. 1290-1292, in case..... | " | 10.25 |
| 1305 | Swiss Bow Spacer, $4\frac{3}{4}$ in., metal handle..... | " | 2.40 |
| 1306 | Swiss Bow Pen, $4\frac{3}{4}$ in., " " " and patent needle..... | " | 3.50 |
| 1307 | Swiss Bow Pencil, $4\frac{3}{4}$ in., " " " " " " " | " | 3.50 |
| 1308 | Swiss Bow Instruments, Nos. 1305-1307, in case..... | " | 11.50 |



Kern's Swiss Instruments, with Patent Pivot Joints and Patent Needle Points, in Pocket Cases.



- 1350 { Swiss Compasses, $5\frac{1}{2}$ in., No. 1270.....
 Swiss Compasses, plain divider, 5 in., No. 1265.....
 Swiss Bow Pen, $3\frac{1}{2}$ in., No. 1291.....
 Swiss Ruling Pen, 5 in., ebony handle, No. 1001..... } in case, each, \$19.25



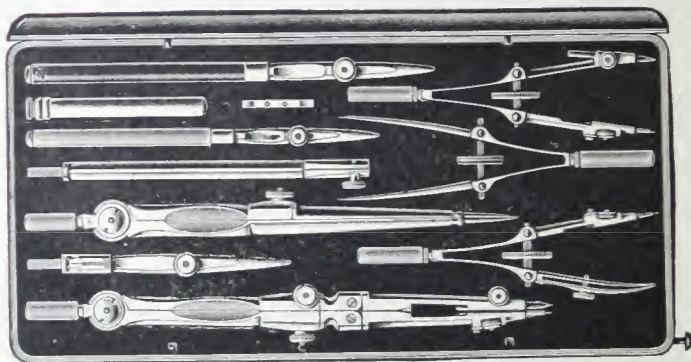
- 1355 { Swiss Compasses, $5\frac{1}{2}$ in., No. 1270.....
 Swiss Hair Spring Divider, 5 in., No. 1266.....
 Swiss Bow Divider, $3\frac{1}{2}$ in., No. 1290.....
 Swiss Bow Pen, $3\frac{1}{2}$ in., No. 1291.....
 Swiss Bow Pencil, $3\frac{1}{2}$ in., No. 1292.....
 Swiss Ruling Pen, $4\frac{1}{2}$ in., ebony handle, No. 1000.....
 Swiss Ruling Pen, 5 in., ebony handle, No. 1001..... } in case, each, \$27.00

- 1357 Same set as No. 1355, but with Ruling Pens, with aluminum handles, Nos. 1005 and 1006.....each, \$27.50

- 1358 Same set as No. 1355, but with Patent Lever Pens, Nos. 1020 and 1021 " 28.00



Kern's Swiss Instruments,
with
Patent Pivot Joint
and
Patent Needle Points, in Pocket Cases.



- | | | |
|--------|---|--------------------------|
| 1365 { | Swiss Compasses, 5½ in., with hairspring, No. 1272....
Swiss Hairspring Divider, 5 in., No. 1266.....
Swiss Center Screw Bow Divider, No. 1280.....
Swiss Center Screw Bow Pen, No. 1281.....
Swiss Center Screw Bow Pencil, No. 1282.....
Swiss Ruling Pen, 4½ in., No. 1000.....
Swiss Ruling Pen, 5 in., No. 1001..... | } in case, each, \$28.75 |
| 1366 | Same set as 1365, but with aluminum handle Pens, Nos. 1005 and 1006..... | each, \$29.25 |
| 1367 | Same set as 1365, but with Patent Lever Pens, Nos. 1020 and 1021 | " 29.75 |
| | Any of above sets in pocket folding cases, style of 1200, furnished at an extra price of..... | " 1.50 |

"Nassau" Drawing Instruments.

Best Quality German Ruling Pens.



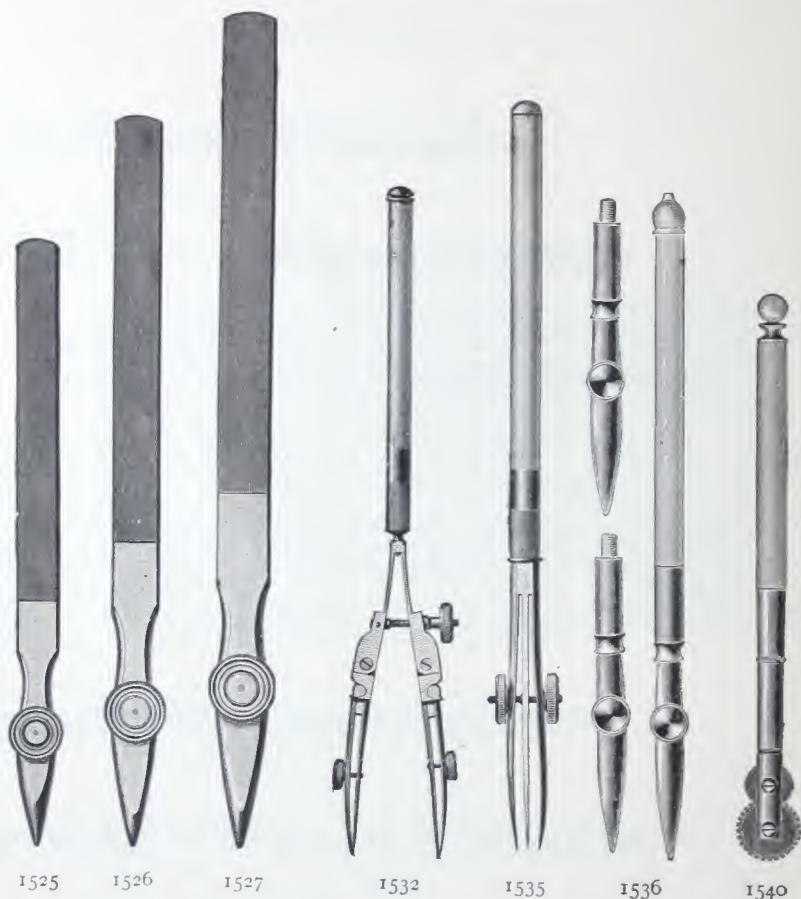
1500	Ruling Pen, 4½ in., upper blade with spring, ebony handle.....	each, \$.60
1501	Ruling Pen, 5 in., “ “ “ “ “ “	“ .70
1502	Ruling Pen, 5½ in., “ “ “ “ “ “	“ .80
1505	Ruling Pen, 4½ in., same as 1500, with aluminum handle.....	“ .75
1506	Ruling Pen, 5 in., same as 1501, “ “ “	“ .85
1507	Ruling Pen, 5½ in., same as 1502, “ “ “	“ .95

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"Nassau" Drawing Instruments — Continued.

Best Quality German Ruling Pens.



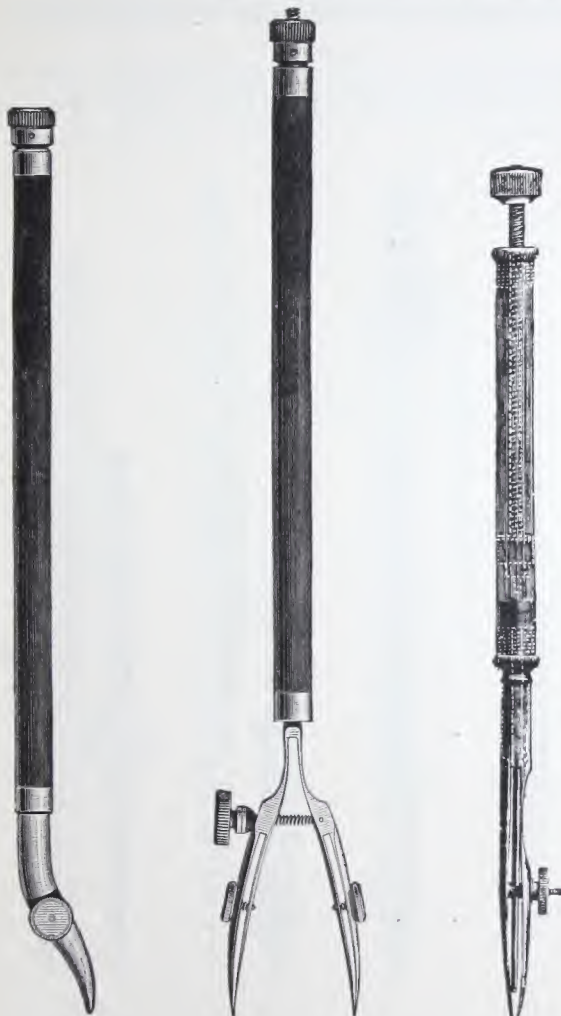
1525	Detail Pen, $4\frac{3}{4}$ in., ebony handle.....	each, \$.75
1526	Detail Pen, 5 in., " "	" .85
1527	Detail Pen, $6\frac{1}{2}$ in., " "	" 1.00
1532	Railroad Pen, $5\frac{1}{2}$ in., with joints.....	" 2.25
1535	Border Pen, 6 in., white handle	" 1.50
1536	Hatching Pen, $5\frac{1}{2}$ in., three blades to one handle.....	" 1.50
1537	Hatching Pen, $5\frac{1}{2}$ in., " " " " in case.....	" 2.00
1540	Dotting Pen, 5 in., white handle.....	" 1.00

1542
1544
1546
1547



"Nassau" Drawing Instruments — Continued.

Best Quality German Instruments.



1542

1544

1546

Although many Fountain Ruling Pens have been in the market during recent years, this is really the first of its kind which is perfect. There are no valves or springs of any kind to get out of order or wear out, in fact the very simplicity of this pen makes it a success. It consists of a German silver tube through which a piston rod passes, and which expels the ink into the pen proper by simply turning the screw-head to the right. If the feeding tube should become clogged with ink, a steel cleaning rod, furnished with each pen, serves to clean it. Simple directions for use with each pen.

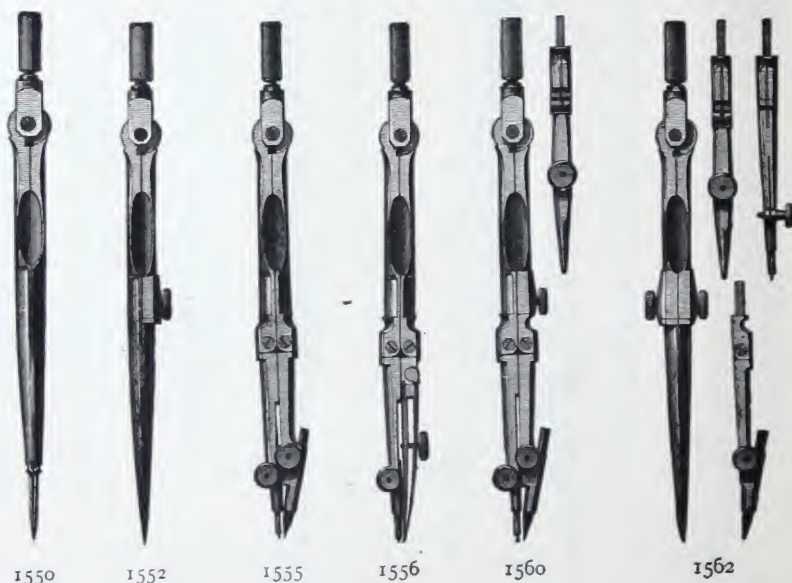
1542	Improved Curve Pen, $4\frac{3}{4}$ in.....	each,	\$1.50
1544	Improved Curve Railroad Pen, $5\frac{1}{4}$ in.....	"	4.25
1546	Improved Fountain Ruling Pen, $5\frac{1}{2}$ in., spring to upper blade, with cleaning rod.....	"	3.50
1547	Fountain Ruling Pen, No. 1546, in vest pocket case.....	"	4.00
	Extra Ruling Pens for above.....	"	1.00
	New washers for above.....	"	.10
	Cleaning Rod, for above.....	"	.40

"Nassau" Drawing Instruments—Continued.**Best Quality German Dividers and Compasses, with Pivot Joints.**

"Nassau" Instruments are made of cast German Silver and Steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear, and are very serviceable for general use.



Sectional view of pivot-jointed head.

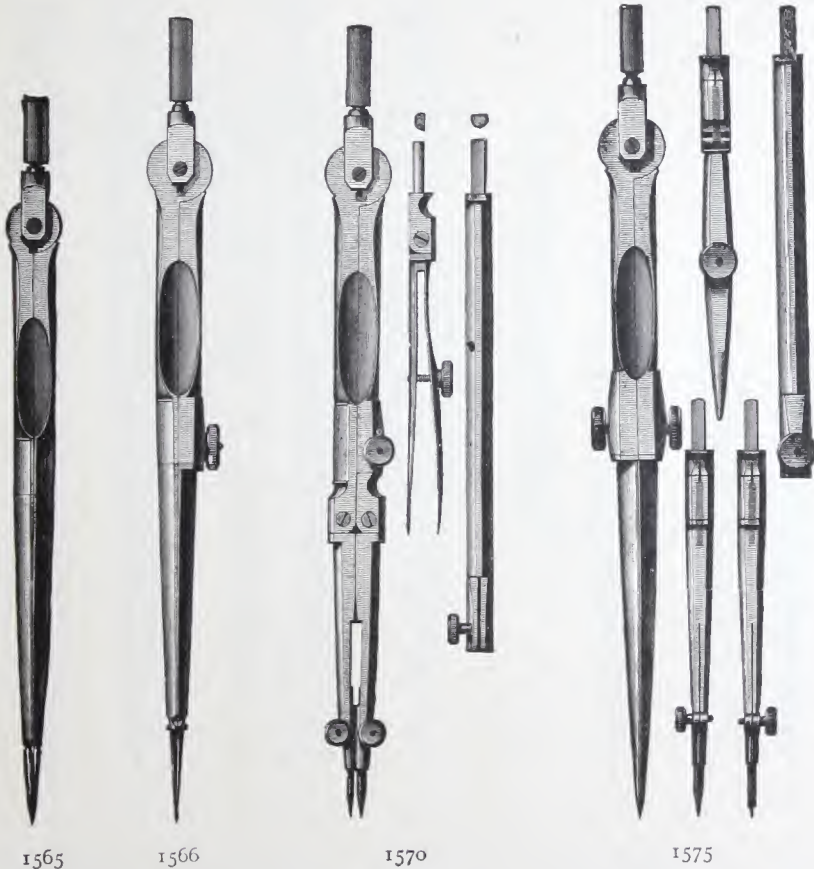


1550	Plain Dividers, $3\frac{1}{2}$ in.....	each, \$1.35
1552	Hair Spring Dividers, $3\frac{1}{2}$ in.....	" 1.75
1555	Compasses, $3\frac{1}{2}$ in., fixed needle and pencil points.....	" 3.00
1556	Compasses, $3\frac{1}{2}$ in., fixed needle and pen points.....	" 3.00
1560	Compasses, $3\frac{1}{2}$ in., fixed needle, pen and pencil points.....	" 3.50
1562	Compasses, $3\frac{1}{2}$ in., with pen, pencil, needle and divider points.....	" 4.00

“Nassau” Drawing Instruments — Continued.

Best Quality German Dividers and Compasses, with Pivot Joints.

“Nassau” Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear and are very serviceable for general use.

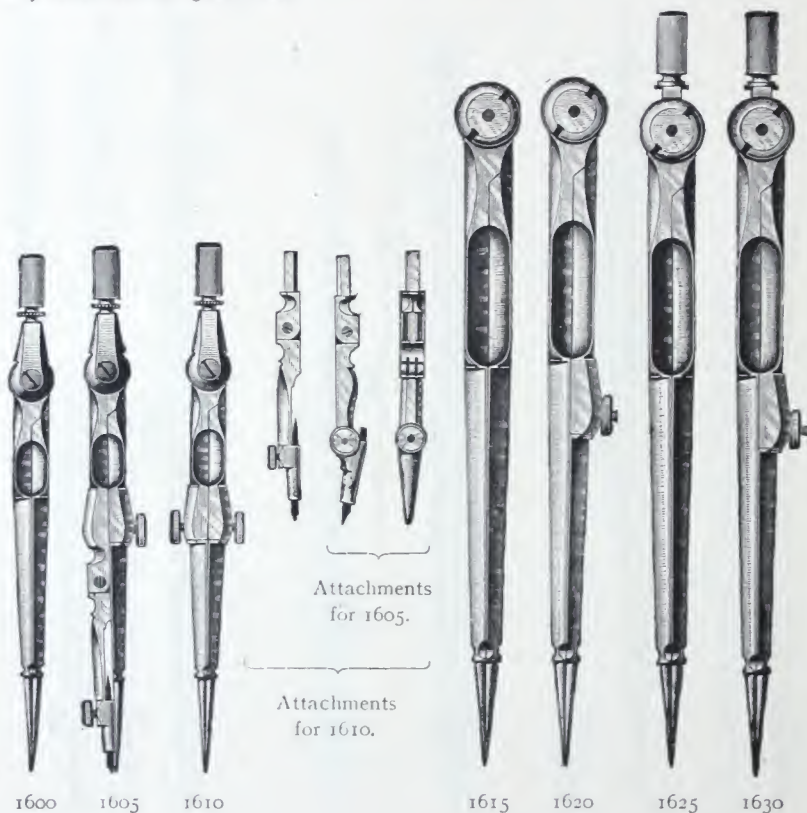


1565	Plain Dividers, 5 in.....	each.	\$1.50
1566	Hair Spring Dividers, 5 in.....	"	2.20
1570	Compasses, 5½ in., with fixed needle, pen, pencil points and lengthening bar.....	"	4.35
1575	Compasses, 6 in., with pen, pencil, needle points, lengthening bar and divider points.....	"	5.00

"Nassau" Drawing Instruments — Continued.

Best Quality German Dividers and Compasses, with Tongue Joints.

"Nassau" Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear, and are very serviceable for general use.

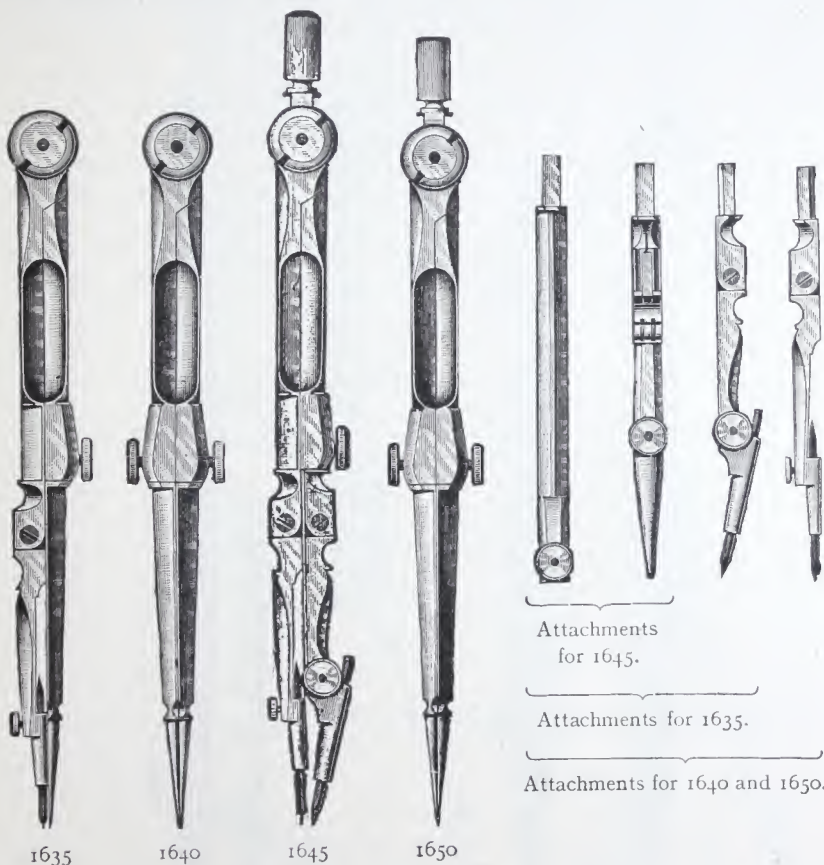


1600	Plain Dividers, $3\frac{1}{2}$ in.....	each, \$.95
1605	Compasses, $3\frac{1}{2}$ in, fixed needle, pen and pencil points.....	" 2.25
1610	Compasses, $3\frac{1}{2}$ in., with pen, pencil, needle point and divider points..	" 2.60
1615	Plain Dividers, 5 in.....	" .80
1620	Hair Spring Dividers, 5 in.....	" 1.40
1625	Plain Dividers, 5 in., with handle.....	" .85
1630	Hair Spring Dividers, 5 in., with handle.....	" 1.60

"Nassau" Drawing Instruments—Continued.

Best Quality German Compasses, with Tongue Joints.

"Nassau" Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss instruments, but will stand reasonable wear, and are very serviceable for general use.



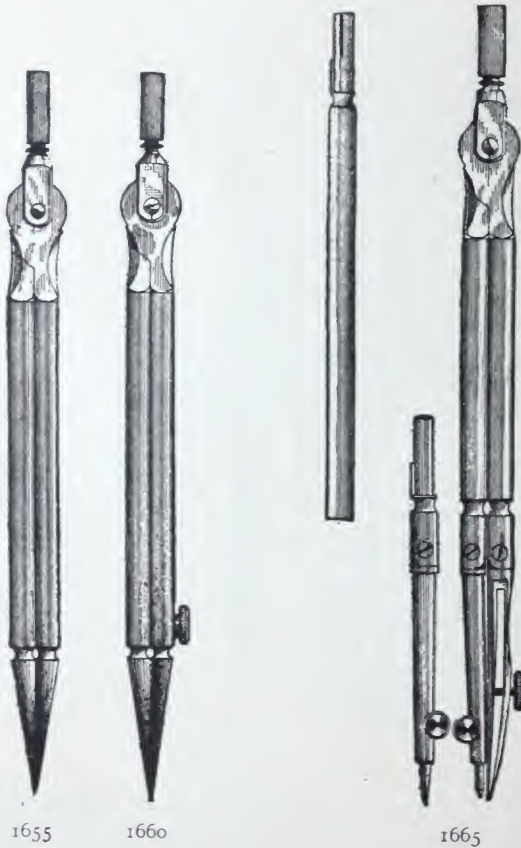
- | | | |
|------|--|--------------|
| 1635 | Compasses, $5\frac{1}{2}$ in., fixed needle, pen, pencil points, lengthening bar and divider point..... | each, \$3.00 |
| 1640 | Compasses, $5\frac{1}{2}$ in., pen, pencil, needle points, lengthening bar and divider points..... | " 3.25 |
| 1645 | Compasses, $5\frac{1}{2}$ in., with fixed needle, pen, pencil points and lengthening bar and handle..... | " 3.00 |
| 1650 | Compasses, $5\frac{1}{2}$ in., pen, pencil, needle points, lengthening bar, divider points and handle..... | " 3.50 |



"Nassau" Drawing Instruments—Continued.

Best Quality German Tubular Dividers and Compasses, with
Pivot Joints.

"Nassau" Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss instruments, but will stand reasonable wear, and are very serviceable for general use.



- | | | |
|------|---|--------------|
| 1655 | Tubular Divider, $5\frac{1}{2}$ in..... | each, \$1.50 |
| 1660 | Tubular Hair Spring Divider, $5\frac{1}{2}$ in..... | " 2.20 |
| 1665 | Tubular Compasses, $5\frac{1}{2}$ in., with fixed needle, pen, pencil points and lengthening bar..... | " 4.35 |

1680
1681
1682
1683

1690
1691
1692
1693
1705
1706
1707
1708

"Nassau" Drawing Instruments — Continued.
Best Quality German Bow Instruments.



1680



1681



1682

- | | | |
|------|--|--------------|
| 1680 | Bow Spacer, $3\frac{1}{2}$ in., centre screw adjustment..... | each, \$1.65 |
| 1681 | Bow Pen, $3\frac{1}{2}$ in., " " " | " 1.95 |
| 1682 | Bow Pencil, $3\frac{1}{2}$ in., " " " | " 1.95 |
| 1683 | Bow Instruments, Nos. 1680-1682, in case..... | " 6.50 |



1690



1691



1692

- | | | |
|------|--|-------------|
| 1690 | Bow Spacer, $3\frac{1}{2}$ in., metal handle..... | each \$1.10 |
| 1691 | Bow Pen, $3\frac{1}{2}$ in., metal handle..... | " 1.45 |
| 1692 | Bow Pencil, $3\frac{1}{2}$ in., metal handle..... | " 1.45 |
| 1693 | Bow Instruments, No. 1690-1692, in case..... | " 4.65 |
| 1705 | Bow Spacer, $4\frac{3}{4}$ in., metal handle | " 1.85 |
| 1706 | Bow Pen, $4\frac{3}{4}$ in., metal handle..... | " 2.10 |
| 1707 | Bow Pencil, $4\frac{3}{4}$ in., metal handle..... | " 2.10 |
| 1708 | Bow Instruments, Nos. 1705-1707, in case..... | " 6.90 |



"Nassau" Drawing Instruments — Continued.

Best Quality German Bow Instruments.



1710



1711



1712

- | | | |
|------|---|--------------|
| 1710 | Bow Spacer, $3\frac{1}{2}$ in., ivory handle..... | each, \$1.00 |
| 1711 | Bow Pen, $3\frac{1}{2}$ in., ivory handle..... | " 1.35 |
| 1712 | Bow Pencil, $3\frac{1}{2}$ in., ivory handle..... | " 1.35 |
| 1713 | Bow Instruments, Nos. 1710-1712, in case..... | " 4.50 |



1715



1716



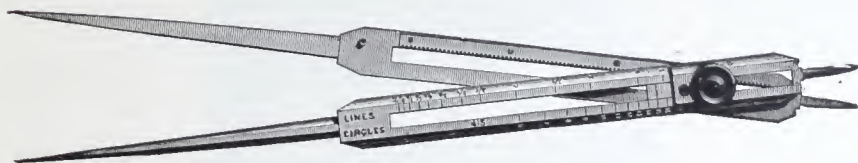
1717

- | | | |
|------|---|--------------|
| 1715 | Bow Spacer, $2\frac{1}{2}$ in., metal handle..... | each, \$1.10 |
| 1716 | Bow Pen, $2\frac{1}{2}$ in., metal handle..... | " 1.35 |
| 1717 | Bow Pencil, $2\frac{1}{2}$ in.,..... | " 1.35 |
| 1718 | Bow Instruments, Nos. 1715-1717, in case..... | " 4.65 |

“Nassau” Drawing Instruments — Continued.

Best Quality German Proportional Dividers.

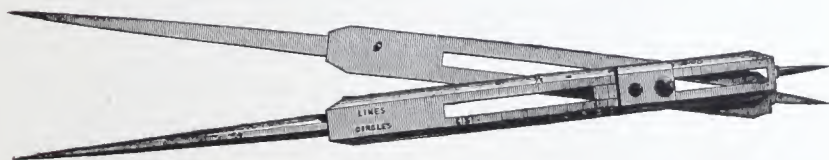
“Nassau” Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear and are very serviceable for general use.



1725-1726

1725 Proportional Dividers, 8 in., for lines and circles, with rack movement, each, \$8.50

1726 Proportional Dividers, 8 in., No. 1725, in case..... “ 9.25



1730-1731

1730 Proportional Dividers, 7½ in., for lines and circles.....each, \$6.50

1731 Proportional Dividers, 7½ in., No. 1730, in case..... “ 7.25



1740-1745

1740 Common Brass Proportional Dividers, 6½ in., in case.....each, \$1.90

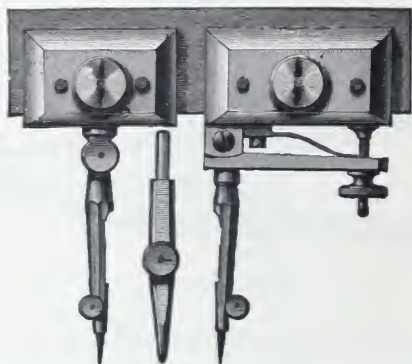
1745 Common German Silver Proportional Dividers, 6½ in., in case..... “ 2.35



"Nassau" Drawing Instruments — Continued.

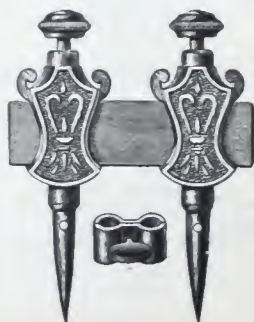
Best Quality German Beam Compasses.

"Nassau" Beam Compasses are made of cast German silver and steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear.



1750	Beam Compasses.....	each, \$5.75
1751	Beam Compasses, No. 1750, in case.....	" 6.60
1760	Beam Compasses, small pattern.....	" 5.35
1761	Beam Compasses, small pattern, in case.....	" 6.20

Bronze Metal Trammel Points.



1765 Trammel Points, bronze metal, steel points:

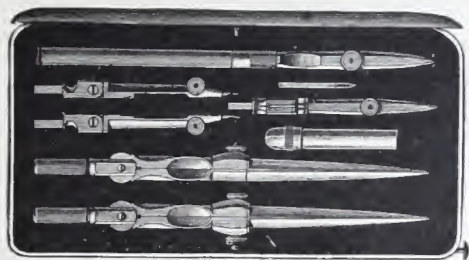
	Small	Medium	Large
Per pair.....	\$1.25	\$1.55	\$2.20

Beam Compass Bars, see page 42.

"Nassau" Drawing Instruments—Continued.

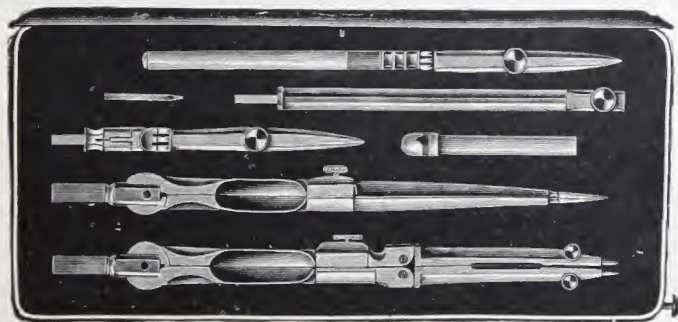
Best Quality German Drawing Sets, in Pocket Cases.

"Nassau" Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear, and are very serviceable for general use.



- | | | | | |
|------|---|--|---|-----------------------|
| 1800 | { | Compasses, $3\frac{1}{2}$ in., No. 1562..... | } | in case, each, \$7.50 |
| | | Hair Spring Divider, $3\frac{1}{2}$ in., No. 1552..... | | |
| | | Ruling Pen, $4\frac{1}{2}$ in., No. 1511..... | | |

- | | | | | |
|------|---|---|---|-----------------------|
| 1805 | { | Compasses, $3\frac{1}{2}$ in., No. 1560..... | } | in case, each, \$6.75 |
| | | Hair Spring Divider, $3\frac{1}{2}$ in., No. 1552 ... | | |
| | | Ruling Pen, $4\frac{1}{2}$ in., No. 1511..... | | |

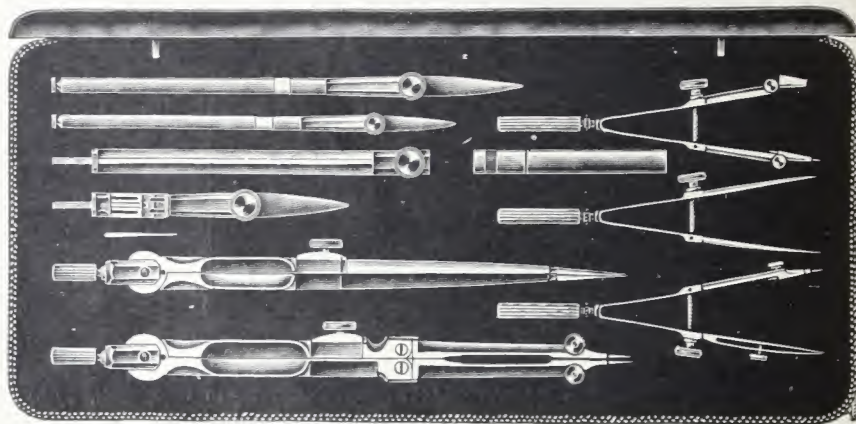


- | | | | | |
|------|---|---|---|-----------------------|
| 1810 | { | Compasses, $5\frac{1}{2}$ in., No. 1570..... | } | in case, each, \$9.00 |
| | | Hair Spring Divider, 5 in., No. 1566..... | | |
| | | Ruling Pen, $5\frac{1}{2}$ in., No. 1512..... | | |

"Nassau" Drawing Instruments — Continued.

Best Quality German Drawing Sets, in Pocket Cases.

"Nassau" Drawing Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear, and are very serviceable for general use.



- | | | | | |
|------|---|---|---|------------------------|
| 1825 | { | Compasses, $5\frac{1}{2}$ in., No. 1570..... | } | in case, each, \$12.50 |
| | | Hair Spring Divider, 5 in. No. 1566..... | | |
| | | Bow Spacer, $3\frac{1}{2}$ in., No. 1690..... | | |
| | | Bow Pen, $3\frac{1}{2}$ in., No. 1691..... | | |
| | | Bow Pencil, $3\frac{1}{2}$ in., No. 1692..... | | |
| | | Ruling Pen, $4\frac{1}{2}$ in., No. 1500..... | | |
| | | Ruling Pen, 5 in., No. 1501..... | | |

1826 Same set as No. 1825, but with Ruling Pens, white handles, Nos. 1511 and 1512.....each, \$13.00

1827 Same set as No. 1825, but with Ruling Pens, aluminum handles, Nos. 1505 and 1506.....each, \$13.00

- | | | | | |
|------|---|--|---|------------------------|
| 1830 | { | Tubular Compasses, $5\frac{1}{2}$ in., No. 1665..... | } | in case, each, \$12.50 |
| | | Tubular Hair Spring Divider, 5 in., No. 1660..... | | |
| | | Bow Spacer, $3\frac{1}{2}$ in., No. 1690..... | | |
| | | Bow Pen, $3\frac{1}{2}$ in., No. 1691..... | | |
| | | Bow Pencil, $3\frac{1}{2}$ in., No. 1692..... | | |
| | | Ruling Pen, $4\frac{1}{2}$ in., No. 1500..... | | |
| | | Ruling Pen, 5 in., No. 1501..... | | |

1831 Same set as No. 1830, but with Ruling Pens, Nos. 1511 and 1512, in case.....each, \$13.00

"Nassau" Drawing Instruments — Continued.

Best Quality German Drawing Sets, in Pocket Folding Cases.

"Nassau" Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear and are very serviceable for general use.



Folding Case when closed.



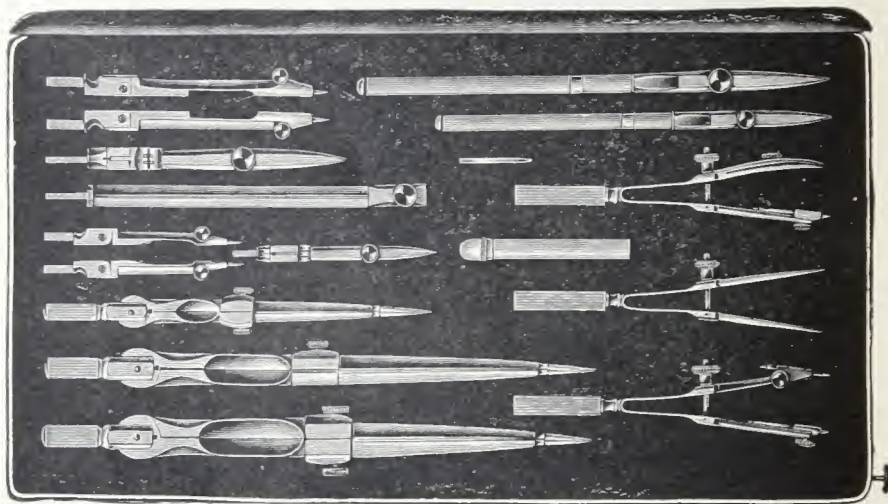
1835

- | | | |
|------|---|--------------------------|
| | Compasses, $5\frac{1}{2}$ in., No. 1570..... | } in case, each, \$13.50 |
| | Hair Spring Divider, 5 in., No. 1566..... | |
| | Bow Spacer, $3\frac{1}{2}$ in., No. 1690..... | |
| 1835 | Bow Pen, $3\frac{1}{2}$ in., No. 1691..... | |
| | Bow Pencil, $3\frac{1}{2}$ in., No. 1692..... | |
| | Ruling Pen, $4\frac{1}{2}$ in., No. 1500..... | |
| | Ruling Pen, 5 in., No. 1501..... | |
| 1836 | Same set as No. 1835, but with Pens, Nos. 1511 and 1512, in case.. each, \$14.00 | |
| 1837 | Same set as No. 1835, but with Pens, Nos. 1505 and 1506, in case.. " 14.00 | |
| 1840 | Same set as No. 1835, but with Tubular Compasses No. 1665, and Tubular Hair Spring Divider No. 1660, in case..... " 13.50 | |
| 1841 | Same set as No. 1840, but with Pens, Nos. 1511 and 1512.. in case " 14.00 | |



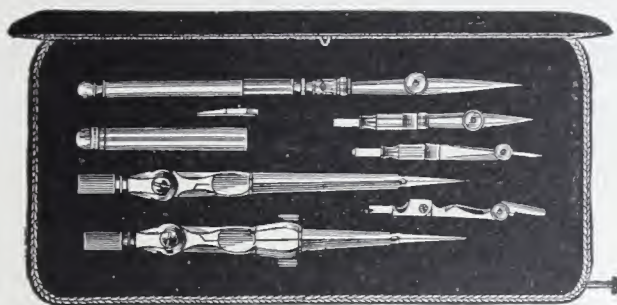
"Nassau" Drawing Instruments—Continued.
Best Quality German Drawing Sets, in Pocket Cases.

"Nassau" Drawing Instruments are made of cast German silver and steel. They are not so finely finished as the Swiss Instruments, but will stand reasonable wear, and are very serviceable for general use.



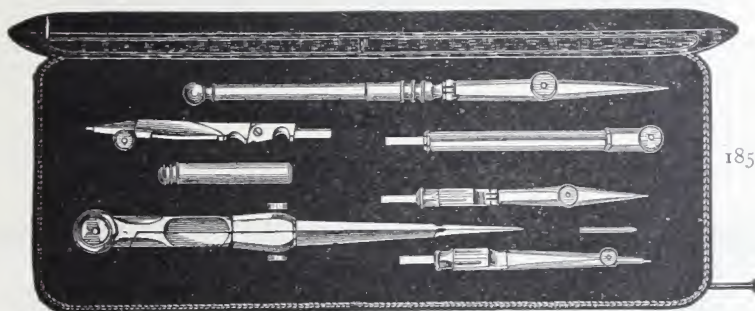
- | | | |
|------|--|--------------------------|
| | Compasses, 6 in., No. 1575..... | } in case, each, \$18.50 |
| | Hair Spring Divider, 5 in., No. 1566..... | |
| | Compasses, 3½ in., No. 1562..... | |
| 1845 | Bow Spacer, 3½ in., No. 1690..... | |
| | Bow Pen, 3½ in., No. 1691..... | |
| | Bow Pencil, 3½ in., No. 1692..... | |
| | Ruling Pen, 4½ in., No. 1500..... | |
| | Ruling Pen, 5 in., No. 1501..... | |
| 1846 | Same set as No. 1845, but with Ruling Pens, Nos. 1511 and 1512,
in case.....each, \$19.00 | |
| | Compasses, 5½ in., No. 1570..... | } in case, each, \$17.50 |
| | Hair Spring Divider, 5 in., No. 1566..... | |
| | Compasses, 3½ in., No. 1560..... | |
| 1848 | Bow Spacer, 3½ in., No. 1690..... | |
| | Bow Pen, 3½ in., No. 1691..... | |
| | Bow Pencil, 3½ in., No. 1692..... | |
| | Ruling Pen, 4½ in., No. 1500..... | |
| | Ruling Pen, 5 in., No. 1501..... | |
| 1849 | Same set as No. 1848, but with Ruling Pens, Nos. 1511 and 1512,
in case.....each, \$18.00 | |

"Nassau" Drawing Instruments — Continued.
Best Quality German Drawing Sets, Tongue Joints, in Pocket Cases.



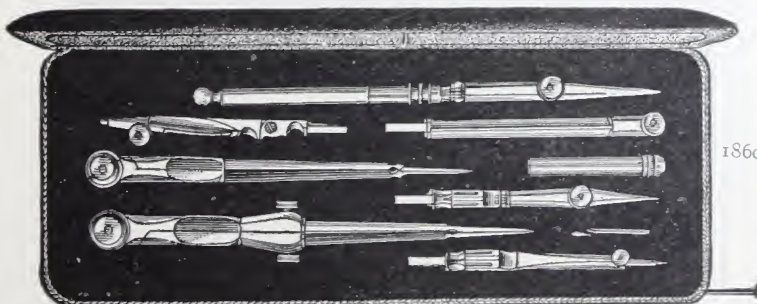
1850

- 1850 { Compasses, No. 1610..... }
{ Divider, No. 1600..... } in case, each, \$5.00
{ Ruling Pen, No. 1511..... }



1855

- 1855 { Compasses, No. 1640..... }
{ Ruling Pen, No. 1512..... } in case, each, \$4.90



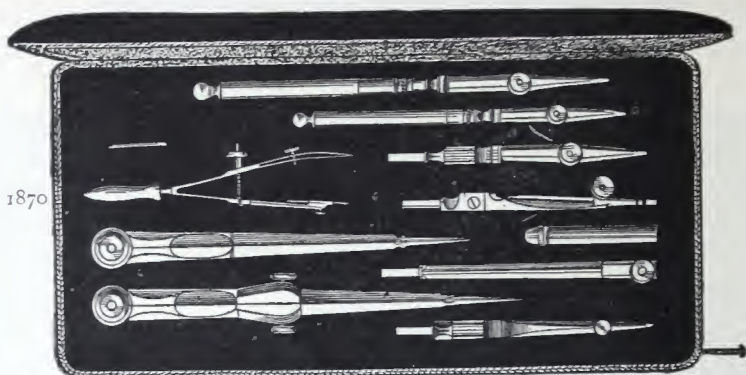
1860

- 1860 { Compasses, No. 1640..... }
{ Plain Divider, No. 1615..... } in case, each, \$6.25
{ Ruling Pen, No. 1512..... }
1862 { Compasses, No. 1645..... }
{ Plain Divider, No. 1625..... } in case, each, \$5.45
{ Ruling Pen, No. 1501..... }

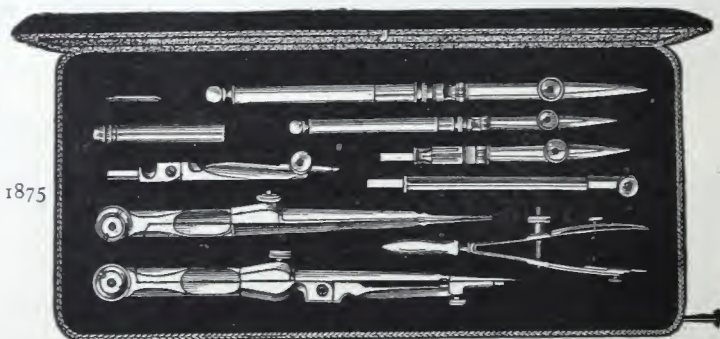


"Nassau" Drawing Instruments — Continued.

Best Quality German Drawing Sets, Tongue Joints, in Pocket Cases.

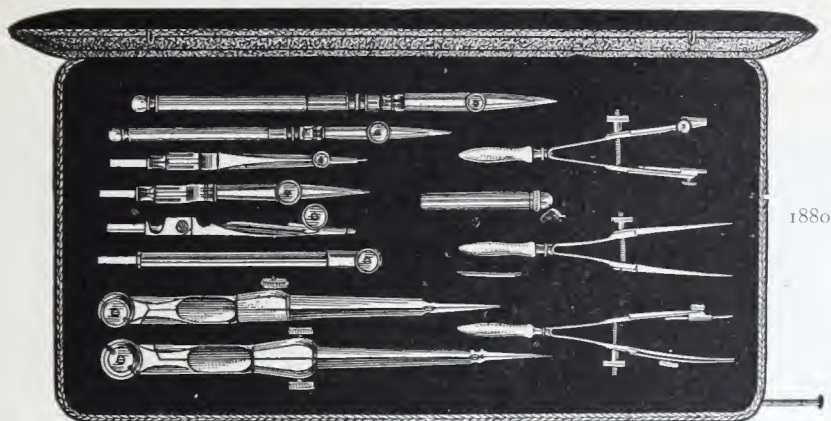


- | | | | | |
|------|---|------------------------------------|-----------------------|--|
| 1870 | { | Compasses, No. 1640 | | |
| | | Plain Divider, No. 1615 | | |
| | | Bow Pen, No. 1711 | | |
| | | Ruling Pens, Nos. 1511, 1512 | | |
| | } | | in case, each, \$7.85 | |
| 1872 | { | Compasses, No. 1645 | | |
| | | Plain Divider, No. 1625 | | |
| | | Bow Pen, No. 1691 | | |
| | | Ruling Pen, No. 1501 | | |
| | } | | in case, each, \$6.75 | |

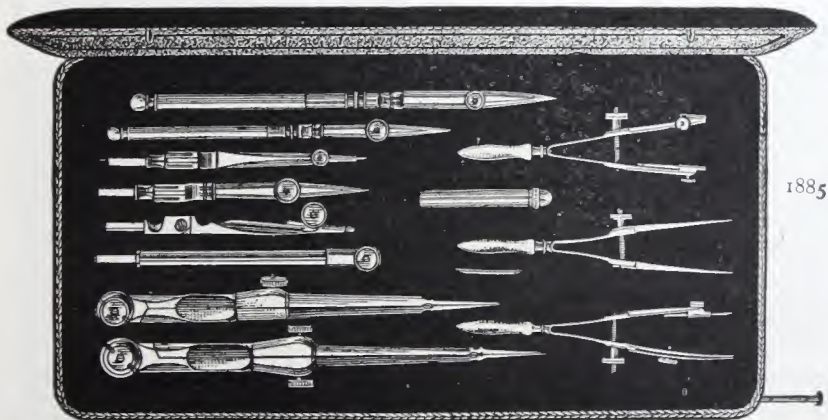


- | | | | | |
|------|---|---|-----------------------|--|
| 1875 | { | Compasses, No. 1635 | | |
| | | Hair Spring Divider, No. 1620 | | |
| | | Bow Pen, No. 1711 | | |
| | | Ruling Pens, Nos. 1511, 1512 | | |
| | } | | in case, each, \$8.50 | |
| 1876 | { | Compasses, No. 1635 | | |
| | | Plain Divider, No. 1615 | | |
| | | Bow Pen and Pencil, Nos. 1691, 1692 | | |
| | | Ruling Pen, No. 1512 | | |
| | } | | in case, each, \$8.75 | |
| 1877 | { | Compasses, No. 1645 | | |
| | | Divider, No. 1625 | | |
| | | Bow Pen and Pencil, Nos. 1691, 1692 | | |
| | | Ruling Pen, No. 1501 | | |
| | } | | in case, each, \$8.50 | |

"Nassau" Drawing Instruments — Continued.



- | | | | |
|------|---|---|--------------------------|
| 1880 | { | Compasses, No. 1640..... | } in case, each, \$11.80 |
| | | Hair Spring Divider, No. 1620..... | |
| | | Bow Instruments, Nos. 1710, 1711, 1712..... | |
| | | Ruling Pens, Nos. 1511, 1512..... | |
| 1882 | { | Compasses, No. 1645..... | } in case, each, \$11.00 |
| | | Divider, No. 1625..... | |
| | | Bow Instruments, Nos. 1690, 1691, 1692..... | |
| | | Ruling Pens, Nos. 1500, 1501..... | |

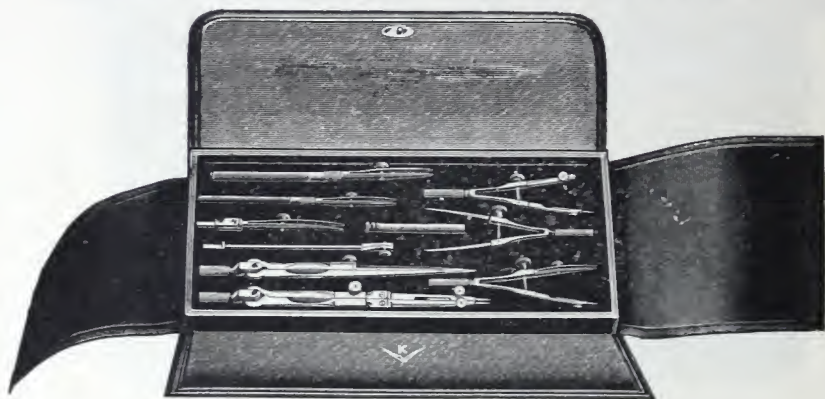


- | | | | |
|------|---|---|--------------------------|
| 1885 | { | Compasses, No. 1640..... | } in case, each, \$14.85 |
| | | Hair Spring Divider, No. 1620..... | |
| | | Compasses, No. 1610..... | |
| | | Bow Instruments, Nos. 1710, 1711, 1712..... | |
| | | Ruling Pens, Nos. 1511, 1512..... | |
| 1887 | { | Compasses, No. 1645..... | } in case, each, \$13.50 |
| | | Divider, No. 1625..... | |
| | | Compasses, No. 1605..... | |
| | | Bow Instruments, Nos. 1690, 1691, 1692..... | |
| | | Ruling Pens, Nos. 1500, 1501..... | |

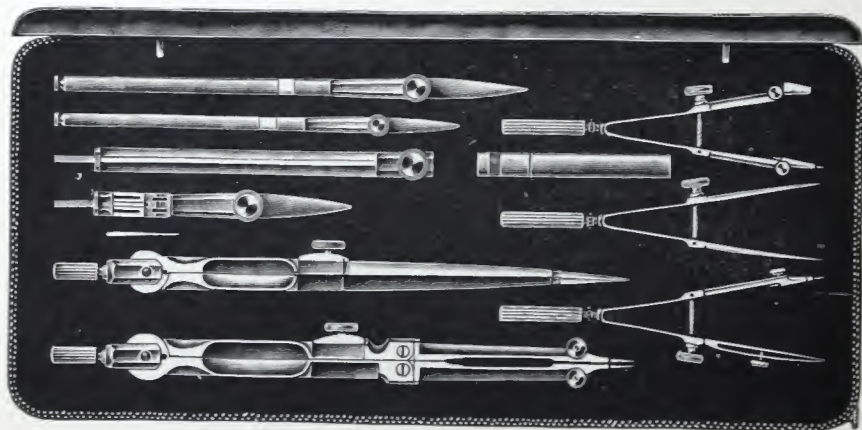


"Barclay" Drawing Instruments.

Second Quality German Drawing Sets, in Pocket Cases.



1900	{	Compasses, $5\frac{1}{2}$ in.....	}	in Pocket Folding Case, each.....\$9.40
		Hair Spring Divider, 5 in.....		
		Bow Spacer, $3\frac{1}{2}$ in.....		
		Bow Pen, $3\frac{1}{2}$ in.....		
		Bow Pencil, $3\frac{1}{2}$ in.....		
		Ruling Pen, $4\frac{1}{2}$ in., Spring in upper blade.....		
		Ruling Pen, 5 in., Spring in upper blade.....		

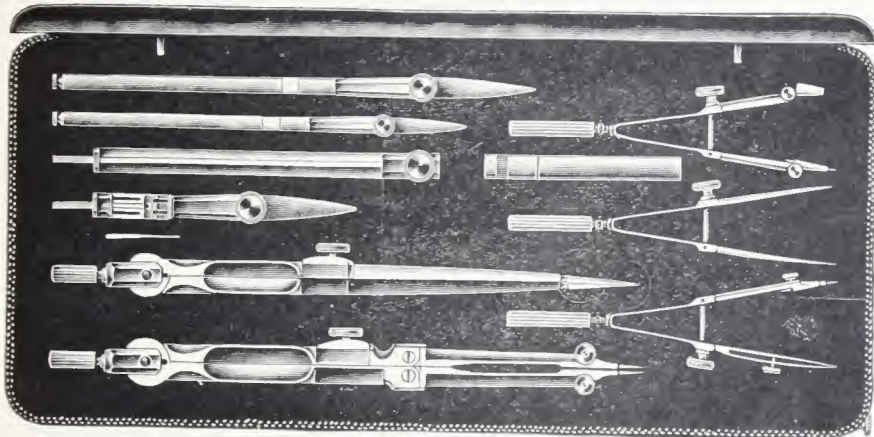


1905

1905	{	Compasses, $5\frac{1}{2}$ in.....	}	in case, each \$8.80
		Hair Spring Divider, 5 in.....		
		Bow Spacer, $3\frac{1}{2}$ in.....		
		Bow Pen, $3\frac{1}{2}$ in.....		
		Bow Pencil, $3\frac{1}{2}$ in.....		
		Ruling Pen, $4\frac{1}{2}$ in., spring in upper blade.....		
		Ruling Pen, 5 in., spring in upper blade.....		

“Barclay” Drawing Instruments — Continued.

Third Quality German Drawing Sets, in Pocket Cases.



1910

1910	{	Compasses, 5½ in.....	}	in case, each, \$6.10
		Hair Spring Divider, 5 in.....		
		Bow Spacer, 3½ in.....		
		Bow Pen, 3½ in.....		
		Bow Pencil, 3½ in.....		
		Ruling Pen, 4½ in.....		
		Ruling Pen, 5 in.....		

1912	{	Compasses, 5½ in.....	}	in case, each, \$4.70
		Plain Divider, 5 in.....		
		Bow Pen, 3½ in.....		
		Bow Pencil, 3½ in.....		
		Ruling Pen, 5 in.....		

1914	{	Compasses, 5½ in.....	}	in case, each, \$4.10
		Plain Divider, 5 in.....		
		Bow Pen, 3½ in.....		
		Ruling Pen, 5 in.....		

1916	{	Compasses, 5½ in.....	}	in case, each, \$3.40
		Plain Divider, 5 in.....		
		Ruling Pen, 5 in.....		



Combination Drawing Sets, for School Use.

PATENTED JULY 19TH, 1892.*



This Instrument combines Divider, Pen and Pencil Compass in one piece. It has no loose parts to get lost, and is always adjusted by the spring washer in the head of the Instrument; it is an accurate, durable, practical and cheap set of tools, and is just the thing for the Mechanic, Student, etc.

1925 Combination Drawing Set, Nickel-plated.....each, \$.75



1926 Combination Drawing Set, Nickel-plated, and 5 in. Ruling pen, in Pocket Case.....each, \$1.25

The above Case can be conveniently carried in the vest pocket.

Students' Drawing Outfit.

Specially adapted for Correspondence School Students in the courses of Architecture, Civil and Mechanical Engineering.

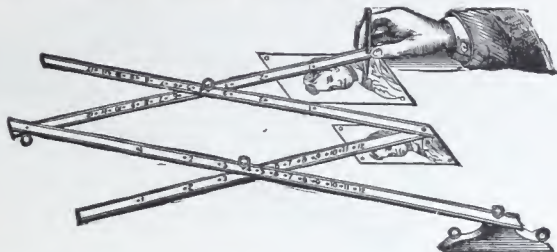
1935 Consisting of one set Drawing Instruments, No. 1912, containing:

- Pivot Joint Compasses, $5\frac{1}{2}$ in.
- Pivot Joint Divider, 5 in.
- Steel Spring Bow Pen, $3\frac{1}{2}$ in.
- Steel Spring Bow Pencil, $3\frac{1}{2}$ in.
- Ruling Pen, 5 in., ebony handle, Spring in upper blade.
- 1 Drawing Board, pine, 16 x 21 in., with hardwood cleats.
- 1 Celluloid Triangle, 30 and 60 deg., 9 in.
- 1 Celluloid Triangle, 45 deg., 7 in.
- 1 T Square, 24 in., ash lined, with maple fixed head.
- 1 Celluloid Protractor, 6 in., open center.
- 1 Triangular Boxwood Scale, 12 in., best quality.
- 1 Celluloid Curve.
- 1 Dozen Steel Thumb Tacks.
- 1 Lead Pencil, 4H.
- 1 Bottle Black Waterproof Drawing Ink.
- 1 Ink and Pencil Eraser.
- 6 Sheets Whatman's Paper, 15 x 20 in., Hot Pressed.
- 2 Sheets Tracing Cloth, 16 x 21 in.

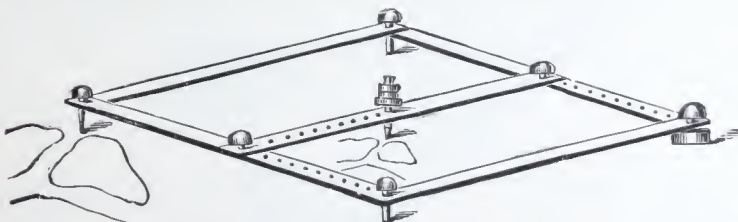
Outfit complete.....each, \$13.50

Pantographs.

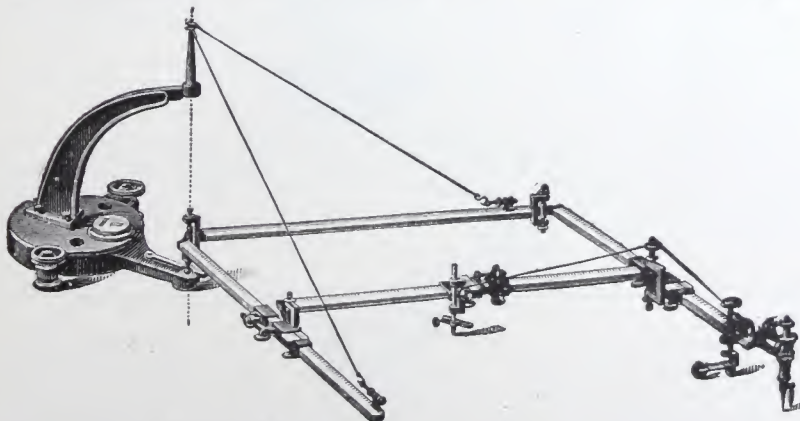
For Enlarging and Reducing Drawings, Maps, Photographs, etc.



- | | | |
|------|--|--------|
| 1940 | Hardwood, polished, arms 41 in. long, with black figures, brass mountings, elbow joint wheel, pencil holder and movable point, each, | \$5.00 |
| 1942 | Hardwood, polished, brass mountings, arms 21 in. long, brass elbow joint wheel, pencil holder and movable point..... | " 2.00 |
| 1944 | Hardwood, plain finish, arms 21 in. long, brass mountings..... | " 1.50 |
| 1946 | Hardwood, 18 in..... | " .25 |



- | | | |
|------|--|--------|
| 1950 | Pantograph of Hardwood, arms 20 in. long.....each, | \$3.50 |
|------|--|--------|



- | | | | | |
|------|---|------------|------------|-------------|
| 1955 | Suspended Pantograph, for reducing or enlarging in all ratios between $\frac{1}{10}$ and $\frac{1}{2}$. Square hollow brass tubes, nickel plated, divided into mm. All joints are set in steel cones, insuring a free and easy movement of the arms. Complete in box, with weights, spirit level and directions..... | 38 in..... | 33 in..... | 28 in Bars. |
| | | \$92.50 | \$85.00 | \$75.00 |



The Boston Universal Pantograph.

PATENT APPLIED FOR.



1958 Boston Universal Pantograph, made of German silver, with 18 in.

Celluloid Triangle, and directions for use, in box.....each, \$45.00

The Boston Universal Pantograph has been designed in order to combine, at a reasonable cost, the accuracy of very expensive and intricate instruments, with the simplicity and handiness of cheap ones. The expectations have been more than fulfilled, inasmuch as the Boston Universal, besides combining the good qualities of former constructions, possesses some new ones of its own, and furthermore, in reducing and enlarging, covers a field never before attempted.

It is of the most simple construction, in principle somewhat similar to the ordinary wooden pantograph, and requires therefore, only a moment to be set to the desired proportion, ready for use.

It is made of metal throughout, with the minutest care and best workmanship, and compares in accuracy with the best instruments in the market, at a fraction of their cost.

The pivotal point is mounted on a celluloid triangle which may be placed anywhere on the most delicate drawing without injuring it, and a few weights will secure its position as well as the commonly used screws or claws.

The center of the pivot is placed exactly over the right-angled corner of the triangle and can, therefore, easily be marked on the plan, making it possible—

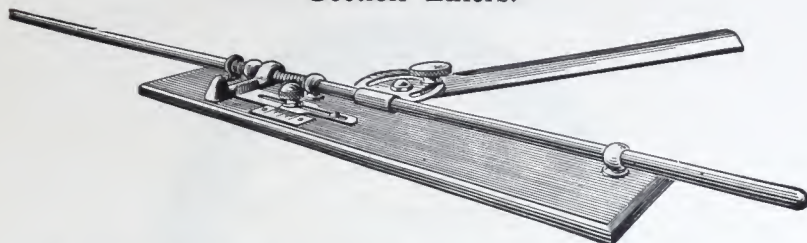
1st. To remove the pantograph entirely and replace it as often as desired.

2nd. To change the position of the triangle and still keep the same pivotal point, thus gaining access to that part of the drawing which the triangle may have covered at first, and obtaining a copy of the entire drawing within the sweep of the pantograph (a circle 8 feet in diameter) without leaving any "bald spots" to be covered separately.

3d. To move the pivotal point from place to place on the plan in a systematic manner and thus reduce or enlarge plans of unlimited size and still get the copy in one piece.

In addition to its use for plain reducing and enlarging, the Boston Universal Pantograph covers a new field in being able to give a copy of a drawing distorted in a systematic manner, as shown to some extent in the accompanying cut, making the pantograph adapted to a variety of purposes more readily imagined than enumerated. These results have been obtained by sliding the triangle on which the pivot is mounted along a straight edge, keeping one side of the triangle against the tracer and consequently against the pencil. In this way the scale parallel to the straight edge is retained and the scale at right angles (or 45 degrees) thereto is changed. An easily acquired familiarity with the pantograph will suggest a wide range of possibilities.

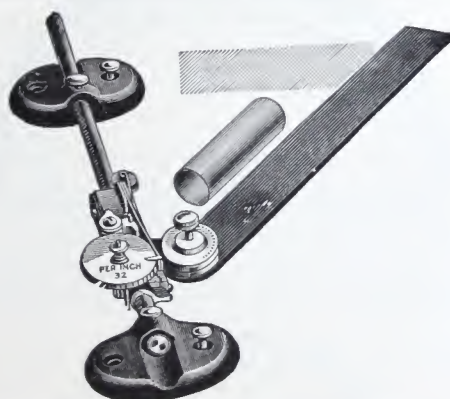
Section Liners.



The **Sphinx Section Liner** is very simple in construction, but nevertheless does very accurate work, whether for close section-lining of 100 to the inch, or wide spacing of 2 to the inch; it can be adjusted to any number of lines per inch and to any angle without changing the position. The instrument rests firmly on the board by means of pins in the bottom, and does not require to be held in position by either T square, straight edge, the hands or weights. (Directions with every instrument.)

The operation of the instrument is very simple and requires no practice.

- 1960 Sphinx Section Liner, in case.....each, \$1.50
 1961 Sphinx Section Liner, with celluloid lined blade, in case..... " 2.00



- 1965 Gardam's Section Liner, Blade 12 inches long, in box.....each, \$6.50
 1966 Gardam's Section Liner, Blade 14 inches long, in box..... " 7.50
 (Full description with every instrument.)

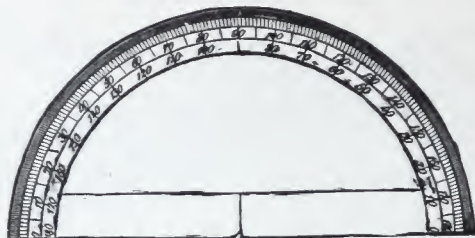


- 1968 **Templet Odontograph**, for describing Teeth of Gear Wheels, a valuable instrument for millwrights, machinists, pattern-makers, etc., with full description, in case.....each, \$3.50

BARTH'S Gear Slide Rule, see page 90.

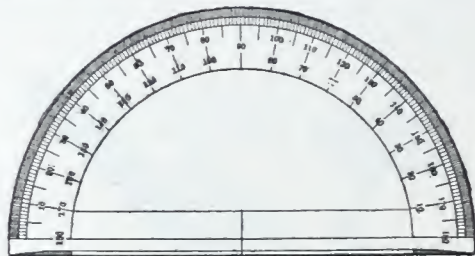


Celluloid Protractors.



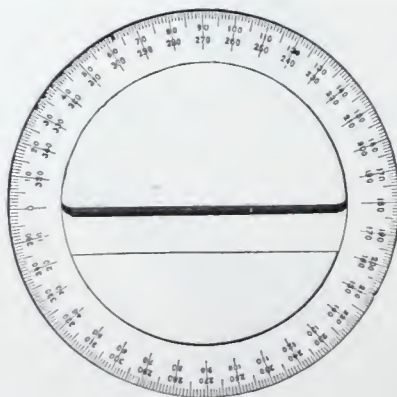
Each

- 1970 Semi-circular Celluloid Protractor, 5 in., open center, divided to $\frac{1}{2}$ deg. . . . \$0.75
 1971 Semi-circular Celluloid Protractor, 6 in., open center, divided to $\frac{1}{2}$ deg.90
 1972 Semi-circular Celluloid Protractor, 8 in., open center, divided to $\frac{1}{2}$ deg. . . . 1.20
 1973 Semi-circular Celluloid Protractor, 10 in., open center, divided to $\frac{1}{2}$ deg. . . . 2.00



Each

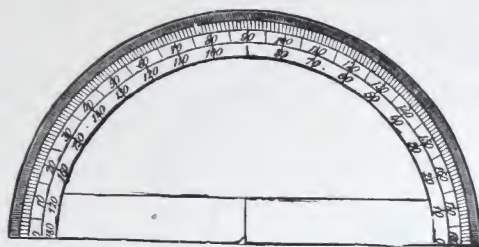
- 1975 Semi-circular Celluloid Protractor, 6 in., beveled edge, open center, $\frac{1}{2}$ deg. \$2.75
 1976 Semi-circular Celluloid Protractor, 8 in., beveled edge, open center, $\frac{1}{2}$ deg. 3.50
 1977 Semi-circular Celluloid Protractor, 10 in., beveled edge, open center, $\frac{1}{2}$ deg. 4.50



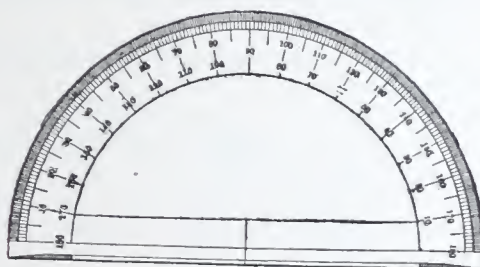
Each

- 1980 Circular Celluloid Protractor, 6 in., beveled edge, open center, $\frac{1}{2}$ deg. . . . \$3.75
 1981 Circular Celluloid Protractor, 8 in., beveled edge, open center, $\frac{1}{2}$ deg. . . . 5.00
 1982 Circular Celluloid Protractor, 10 in., beveled edge, open center, $\frac{1}{2}$ deg. . . . 6.00

German Silver Protractors.

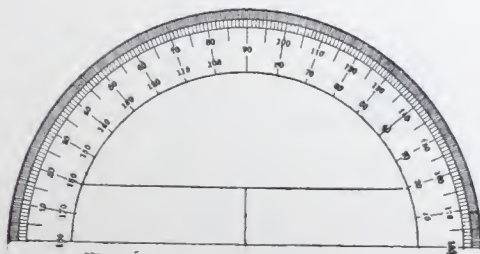


- | | | |
|------|--|--------|
| 1985 | Semi-circular German Silver Protractor, 5 in., $\frac{1}{2}$ deg.....each, | \$.75 |
| 1986 | Semi-circular German Silver Protractor, 6 in., $\frac{1}{2}$ deg..... " | .90 |
| 1987 | Semi-circular German Silver Protractor, 8 in., $\frac{1}{2}$ deg..... " | 1.25 |



- | | | |
|------|---|---------|
| 1990 | Semi-circular German Silver Protractor, 5 in., beveled edge, open center, $\frac{1}{2}$ deg.....each, | \$ 2.00 |
| 1991 | Semi-circular German Silver Protractor, 6 in., beveled edge, open center, $\frac{1}{2}$ deg..... " | 2.75 |
| 1992 | Semi-circular German Silver Protractor, 8 in., beveled edge, open center, $\frac{1}{2}$ deg..... " | 4.50 |

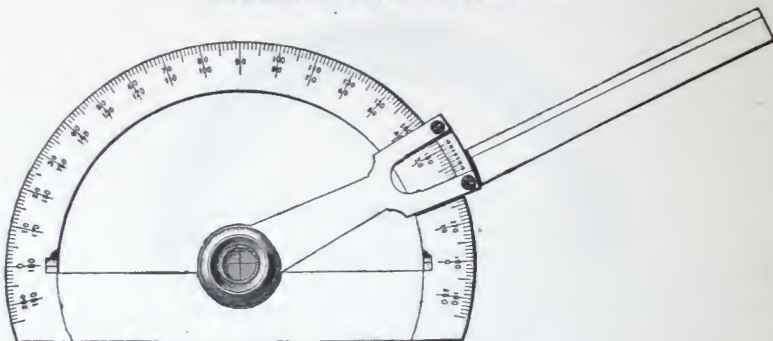
Brass Protractors.



- | | | |
|------|--|--------|
| 1995 | Semi-circular Brass Protractor, 4 in., divided to 1 deg. ....each, | \$.25 |
| 1996 | Semi-circular Brass Protractor, 5 in., divided to 1 deg..... " | .50 |
| 1997 | Semi-circular Brass Protractor, 6 in., divided to 1 deg..... " | .70 |

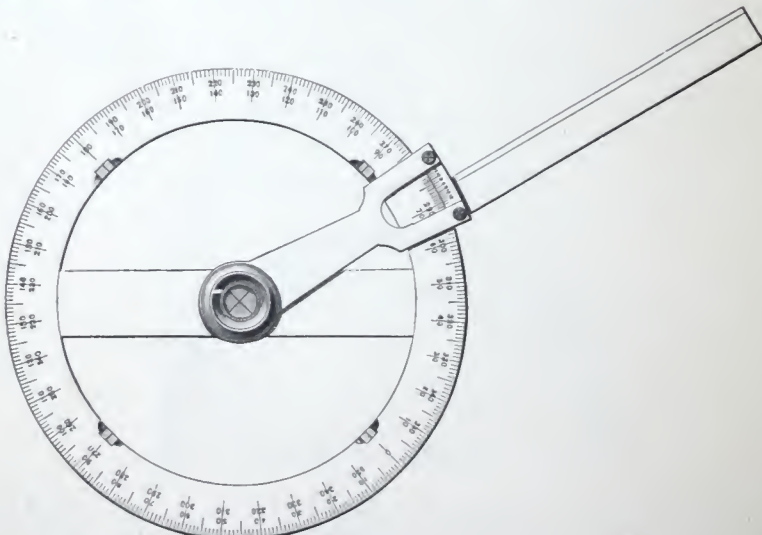


Kern's Swiss Protractors.



Swiss Semi-circular Protractors, made of German Silver, with Vernier, Horn Center and Movable Arm.

2214	5 1/2 in., divided to 1/2 deg., Vernier reading to 3 minutes, length of arm beyond outer edge, 5 1/2 in.....	each, \$14.00
2215	Same, in Morocco Case.....	" 17.15
2218	8 in., divided to 1/4 deg., Vernier reading to 1 minute, length of arm beyond outer edge, 6 in.....	" 17.50
2219	Same, in Morocco Case	" 21.35
2240	10 in., divided to 1/4 deg., Vernier reading to 1 minute, length of arm beyond outer edge, 6 1/2 in.....	" 21.00
2241	Same, in Morocco Case.....	" 25.55

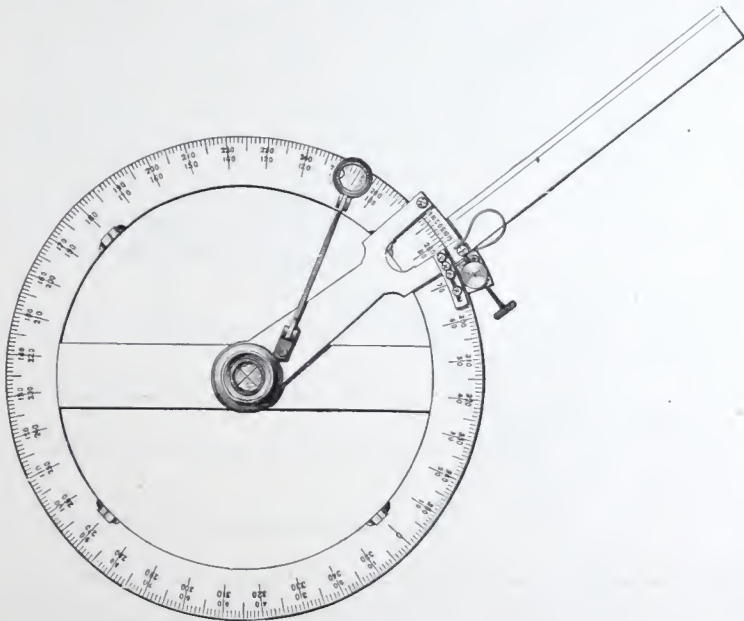


For prices and description see page 83.

Kern's Swiss Protractors—Continued.

Swiss Circular Protractors, made of German Silver with Vernier, Horn Center and Movable Arm.

2244	5½ in., divided to ½ deg., Vernier reading to 3 minutes, length of arm beyond outer edge, 5½ in.....	each, \$17.50
2245	Same, in Morocco Case.....	" 21.00
2256	8 in., divided to ¼ deg., Vernier reading to 1 minute, length of arm beyond outer edge, 6 in.....	" 21.00
2257	Same, in Morocco Case.....	" 25.55
2264	10 in., divided to ¼ deg., Vernier reading to 1 minute, length of arm beyond outer edge, 6½ in.....	" 24.50
2265	Same, in Morocco Case.....	" 30.10

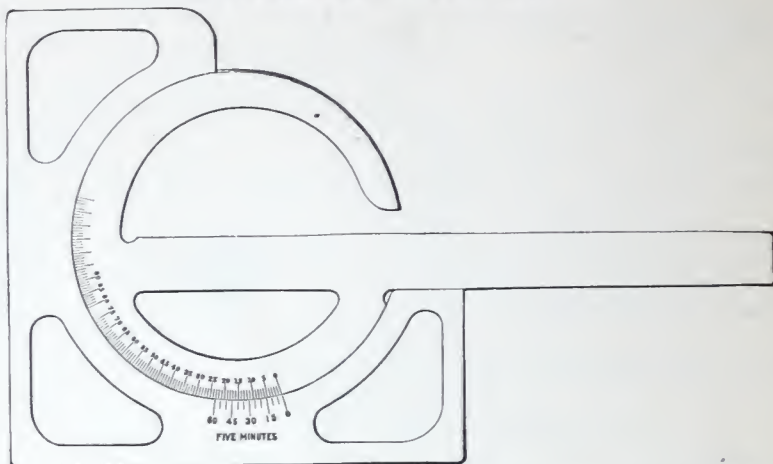


Swiss Circular Protractor, made of German Silver, with Vernier, Horn Center, Movable Arm, Clamp Screw and Micrometer Adjusting Screw to Vernier.

2268	8 in., divided to ¼ deg., Vernier reading to 1 minute, length of arm beyond outer edge, 6 in.....	each, \$26.25
2269	Same as No. 2268, with attached magnifying lens.....	" 29.75
2274	10 in., divided to ¼ deg., Vernier reading to 1 minute, length of arm beyond outer edge, 6½ in.....	" 30.00
2275	Same as No. 2274, with attached magnifying lens.....	" 33.75
2278	Morocco Case for No. 2268 or No. 2269.....	" 4.55
2279	Morocco Case for No. 2274 or 2275.....	" 5.60



Protractors — Continued.



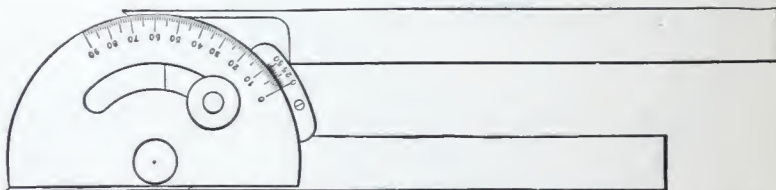
2306 Patented Draughtsmen's Protractor.....each, \$6.50

2307 Patented Draughtsmen's Protractor, in Morocco Case..... " 7.75

The above Protractor can be quickly set to any angle. It can be used either side up and on either side of the two straight edges, and it is of advantage in dividing a circle, transferring angles or laying off a given angle without resetting, on either side of a line.

The Vernier reads to five minutes.

It forms a convenient extension to a T square, and frequently takes the place of 45 deg. and 60 deg. triangles.



2320 Patented Draughtsmen's Protractor.....each, \$4.00

2321 Patented Draughtsmen's Protractor, in polished hardwood case.... " 5.00

The above Protractor has spring tempered steel blades about 9 inches long. The arc is 4 inches in diameter, graduated to degrees, with a vernier reading to five minutes.

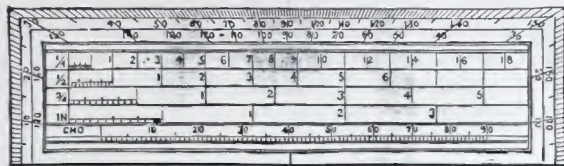
It has a Binding Screw on one side that securely holds the blades at any angle and enables it to be picked up and moved about readily.

The blades are fastened into the arc in such a manner so as to make all parts come flush on the under side, thus making a perfectly flat surface for resting on the table or drawing.

Either blade can be used in contact with a T square, giving any angle and its complement from 0 degrees to 90 degrees.

It forms a perfectly adjustable triangle.

Boxwood and Ivory Protractors.



- 2324 Boxwood Oblong Protractor, 6 in. long, $1\frac{3}{4}$ in. wide, scales of $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 in. to the foot. Scale of chords. Diagonal scales..... each, \$.35
- 2328 Ivory Oblong Protractor, 6 in. long, $1\frac{3}{4}$ in. wide, divided whole degrees, scales of $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 in. to the foot. Scale of chords. Diagonal scales. Scales of 25, 30, 35, 40, 45 parts per in..... " 1.60
- 2332 Ivory Oblong Protractor, 6 in. long, $1\frac{3}{4}$ in. wide, divided whole degrees, scales of $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1 in. to the foot. Scale of chords. Diagonal scale. Scales of 30, 35, 40, 45, 50, 60 parts per in..... " 2.00
- 2338 Ivory Oblong Protractor, 6 in. long, 2 in. wide, divided whole degrees, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$ in. to the foot. Scale of chords. Diagonal scale. Scales of 30, 35, 40, 45, 50, 60 parts per inch..... " 4.35

Paper Protractors.



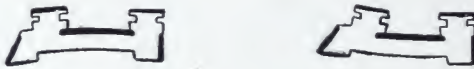
- 2342 Circular Protractor on Drawing Paper, 8 in. diam., $\frac{1}{2}$ deg.....each, \$.20
- 2344 Circular Protractor on Drawing Paper, 14 in. diam., $\frac{1}{4}$ deg..... " .30
- 2346 Circular Protractor on Bristol Board, 8 in. diam., $\frac{1}{2}$ deg..... " .20
- 2348 Circular Protractor on Bristol Board, 14 in. diam., $\frac{1}{4}$ deg..... " .40
- 2352 Circular Protractor on Tracing Paper, 8 in. diam., $\frac{1}{2}$ deg..... " .20
- 2354 Circular Protractor on Tracing Paper, 14 in. diam., $\frac{1}{4}$ deg..... " .30
- 2362 Semi-circular Protractor on Bristol Board, 12 in. diam., $\frac{1}{2}$ deg..... " .20



Slide Rules.

The **Precision Slide Rule** embodies a great improvement over all other similar rules. It is made of the very best, well seasoned, built up Mahogany stock, with white celluloid facings. The graduations are all **engine divided**, clearly and accurately cut, and being on a white background, **very legible**.

The main improvement, however, is the construction of the stock or body of the rule. The rules formerly constructed with celluloid facing **on the inside of the groove only**, are always liable under changes of temperature, climate or humidity to expand, contract or warp, as shown in illustrations below.



In the **Precision Slide Rule** this drawback is entirely overcome by mounting the two faces of the backbone with celluloid as shown in figure below. This eliminates all liability of the rule to warp under changes of atmosphere or temperature.



Above cut illustrates the construction of the "Precision" Slide Rule: *a* is the wood stock; *b*, the celluloid facings; *c*, are strips of rubber underlying the scales. By means of these rubber strips the rule becomes self-adjustable, and all further devices for adjustment are obviated. The ends of the celluloid facings are secured to the wood by German silver screws, thereby insuring absolute adherence to the body of the rule. (See cut on following page.)

Indicators for Slide Rules.



2365



2366

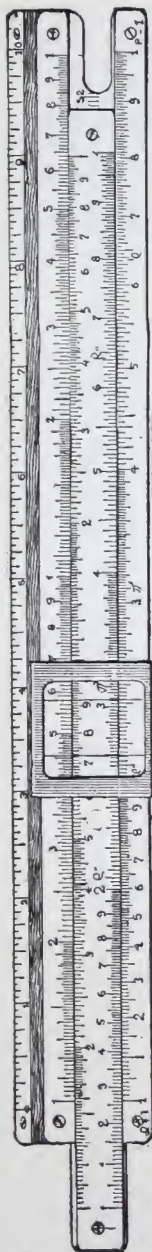


2367



2368

2365	Indicator, single line, for all sizes.....	each, \$	.75
2366	Indicator, double line, for 10 and 20 in. rules.....	"	.75
2367	Indicator, broken line, for 8 and 10 in. rules.....	"	1.05
2368	Brass Indicator, for 10 in. rules.....	"	.75



"PRECISION" SLIDE RULE.

Improved Construction.

(For description see previous page.)

Mannheim Style.

WHITE FACINGS.

Each Rule with Indicator, Case and Book of Directions.

2509	5 inch, with single line Indicator, No. 2365....each,	\$3.50
2562	8 inch, with single line Indicator, No. 2365.... "	4.00
2564	8 inch, with broken line Indicator, No. 2367.... "	4.25
2574	10 inch, with single line Indicator, No. 2365.... "	4.25
2576	10 inch, with Indicator, No. 2366, with 2 hair-lines set in the ratio of 1:12..... "	4.25
2578	10 inch, with broken line Indicator, No. 2367.. "	4.50
2580	15 inch, with single line Indicator, No. 2365... "	9.50
2622	20 inch, with single line Indicator, No. 2365... "	12.50
2623	20 inch, with Indicator, No. 2366, with 2 hair lines set in the ratio of 1:1.7854..... "	12.50

"Rival" Slide Rule.

2711	"Rival" Slide Rule, 10 in., mahogany stock, celluloid facings, light construction, with Indicator, Nos. 2365 or 2366.....each,	\$3.00
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"Stadia" Slide Rule.

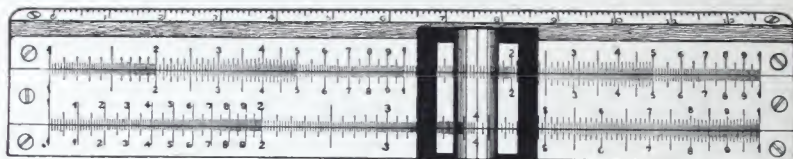
Contains besides the regular scales on the "Precision" Slide Rule, additional scales for calculating stadia readings. -

2713	"Stadia" Slide Rule, 10 in., built up mahogany stock, white facings, improved construction, in case.....each,	\$6.50
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The "Midget" Slide Rule.

White Facings.

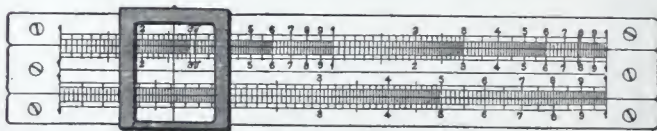


2715. ($\frac{3}{4}$ actual size.)

The "Midget" Slide Rule combines the accuracy of a regular 10 inch "Precision" Slide Rule with the convenience afforded by its compactness and portability. Although its dimensions are restricted to only $5\frac{1}{2}$ in. in length, 1 in. in width and $\frac{5}{16}$ in. in thickness, and its weight, including the case, does not exceed $1\frac{1}{2}$ oz., it ranks in accuracy and reliability with the larger rules. In the construction of the stock, the same vital improvements are embodied which distinguish our slide rules. The ultimate subdivisions are as fine as those on the regular 10 in. rule, and by means of a powerful, yet compact and convenient magnifying glass, their value is easily ascertained with the same percentage of accuracy as can be obtained by the 10 inch rules.

- 2715 "Midget" Slide Rule, 5 in. long, built up mahogany stock, white facings, engine divided, improved construction, with magnifier, in sewed leather case with clasp and directions.....each, \$4.50

"Vest Pocket" Slide Rule.



2717

- 2717 "Vest Pocket" Slide Rule, 5 in., thin mahogany stock, celluloid facings, narrow for pocket use, with glazed aluminum indicator, case and directions.....each, \$2.25

Nestler's Precision Slide Rule.

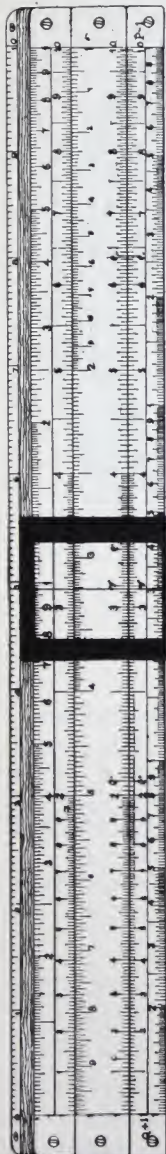
The feature of this Slide Rule is that it is really a 20 inch Slide Rule in a 10 inch length; giving all the fine subdivisions of a 20 inch Rule in a length of 10 inches.

- 2761 Nestler's Precision Slide Rule, in case.....each, \$8.00



The "Triplex" Slide Rule.

A modification of the Mannheim Slide Rule, although resembling the latter in construction and outer appearance, differs from it by the unique grouping of the different scales; these are arranged on the rule starting at the top scale and proceeding to the bottom (see illustration) as follows:



Scale on beveled edge: inches and sixteenths.

Upper scale on top guide piece: Scale of Squares.

Lower scale on top guide piece: Scale from 1—10.

Upper scale on slide: Inverted scale from 10—1.

Lower scale on slide:

Upper scale on bottom guide piece: } Scale from 1—10.

Lower scale on bottom guide piece: Scale of Cubes.

On the reverse of the slide are engraved:

Scale S: Scale of Sines from $34'$ to 90° .

Scale L: Scale of Logarithms:

Scale T: Scale of Tangents from $5^\circ 42'$ to 45° .

Scale on straight bottom edge: cm. and mm., continued on the bottom of channel in rule.

To the back of the rule is affixed a printed table of ratios or equations.

This arrangement of the scales greatly simplifies the use of the rule, especially when it is employed in solving complex calculations. It greatly facilitates the solving of the following arithmetical and trigonometrical computations.

1 An inverted scale of logarithms is always in position for immediate use to solve inverted proportions, etc.

2 By using the two adjoining upper scales of slide and rule for multiplying and the two lower for dividing the result will always be found on the rule beneath one of the indexes.

3 Three numbers can be multiplied by one setting and the square or cube of the product read by means of the indicator.

4 Three successive numbers can be divided consecutively by one setting, and the square or cube of the quotient read by means of the indicator.

5 Two or three numbers may be multiplied in rotation, the product divided by another number and the quotient found by one or two settings.

6 From the foregoing it will be obvious that compound calculations can be performed on the "Triplex" rule by about one half the number of settings required on the regular rule and consequently in one half of the time.

7 Squares, Square Roots, Cubes or Cube Roots can be read off without any setting by means of the indicator, fourth and sixth powers of roots by one setting, fifth and seventh powers by two settings, etc.

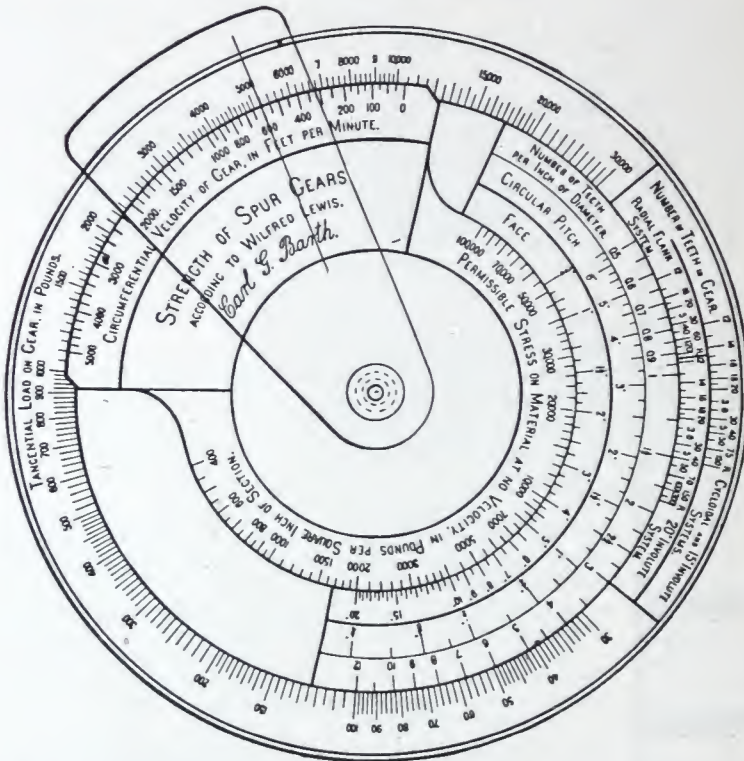
8 Squares, Square Roots, Cubes or Cube Roots and higher Powers and Roots of Sines and Tangents are readily obtained by the foregoing simple operations.

2832 "Triplex" Slide Rule, 10 in., built up mahogany stock, white facings, glazed aluminum indicator, in case.....each, \$6.50

($\frac{1}{2}$ actual size)



Barth's Gear Slide Rule.



For all computations involving teeth of gear wheels, their permissible stress, pitch, velocity, carrying load, etc. An instrument so simple that very little practice is necessary to become familiar with it. No reference tables or diagrams are needed in its use, as within this slide rule is embodied all the information required for the solution of problems in the strength of gearing, when the working strength of the material is assumed or known.

2834 Complete, with set of instructions and formula, in box.....each, \$2.00

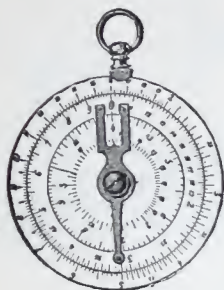
Hudson's Horse Power Indicator

gives at once by one setting:

- The indicated horse power of an engine.
- Size of cylinder required for this power.
- The piston speed.
- For compound cylinders, the ratios, etc.

2884 Hudson's Horse Power Indicator, printed on cardboard, in leather pocket case.....each, \$3.00

Circular Slide Rules.



2893



2894

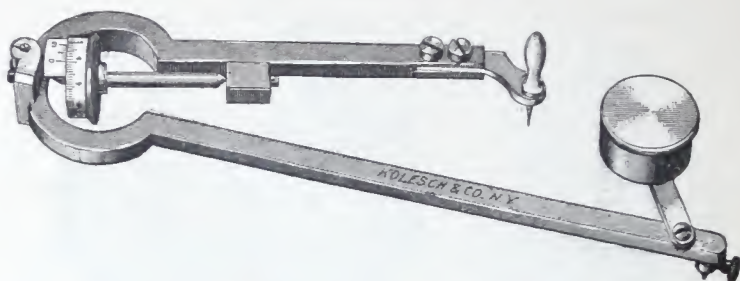
- 2893 The Charpentier Circular Slide Rule**, as shown in illustration above, was designed for vest pocket use. It consists of a German silver disc, $2\frac{3}{8}$ inches diameter, which forms the body of the rule. A brass ring serving as a slide is recessed in the German silver body and is operated by the handle. It compares favorably with a 5 inch slide rule, on account of its compactness and portability, and because it is not affected by changes of temperature.....each, \$5.00
- 2894 The Boucher Watch Form Slide Rule** is constructed in the form of a stem-winding, double-face-watch. Compound calculations can be performed easily on this calculator by means of two pointers, operated by the stemwinder, and indicating simultaneously on both dials....each, 8.50

Cross Section Blocks.

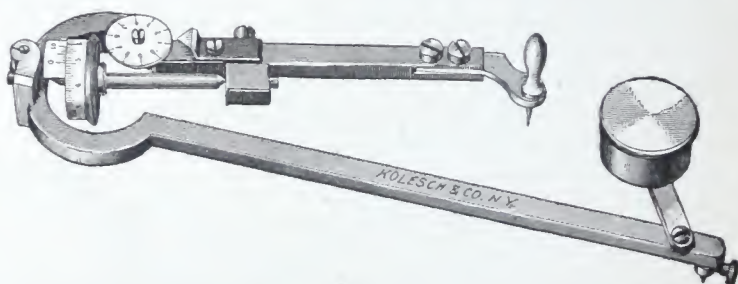
MADE OF RULED CROSS SECTION PAPER, EACH INCH LINE HEAVY.

- 2899 Engineers' Cross Section Blocks**, 10 x 10 to the inch:
Each.....6 x 9 in., \$.40.....9 x 12 in., \$.75.....12 x 18 in., \$1.40
- 2907 Architects' Cross Section Blocks**, 8 x 8 to the inch:
Each.....6 x 9 in., \$.40.....9 x 12 in., \$.75.....12 x 18 in., \$1.40
Other sizes made to order at short notice.
- 2908 Whatman's Sketch Blocks**, made of Whatman's Water Color Paper, Cold Pressed.
Each, 5 x 7 in., \$.40...7 x 10 in., \$.75...10 x 14 in., \$1.50...14 x 20 in., \$2.65
Blocks of Hot Pressed Whatman's Paper made to order at same prices at short notice.
- 2909 Triplex Sketch Blocks**, made of Triplex Drawing Paper No. 80. The Cream color of this paper makes it particularly suitable for sketches.
Each.....6 x 9 in., \$.25.....9 x 12 in., \$.45.....12 x 18 in., \$.90

Planimeters.



- 2927 Polar Planimeter, German silver, for measuring areas up to 10 square inches, in inches, tenths and hundredths of a square inch. Needle pole to balance instrument, Fixed Tracer Arm, in case.....each, \$15.00

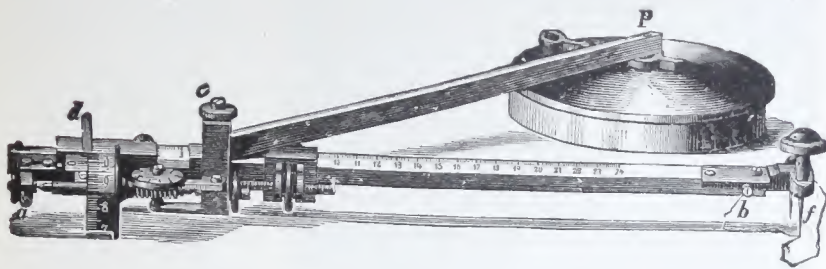


- 2929 Planimeter, German silver, for measuring areas up to 100 square inches, in inches, tenths and hundredths of a square inch. Needle pole to balance instrument, Fixed Tracer Arm, in case.....each, \$16.50



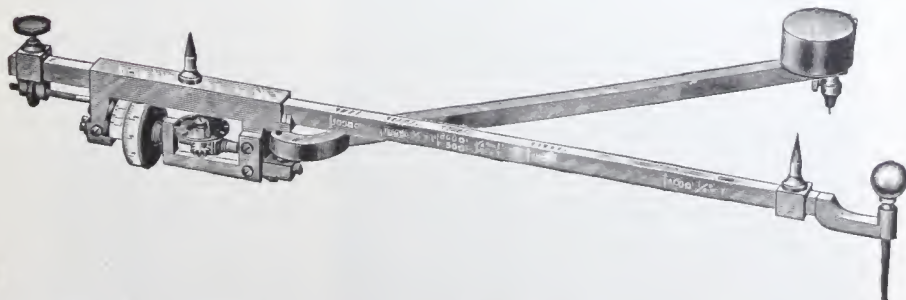
- 2935 Polar Planimeter, German silver, of simple construction, with Adjustable Tracing Arm, 9 inches long, fully graduated, for inches and metric measure. With needle pole, test rule, table of settings and directions, in morocco case.....each, \$24.75

Planimeters — Continued.



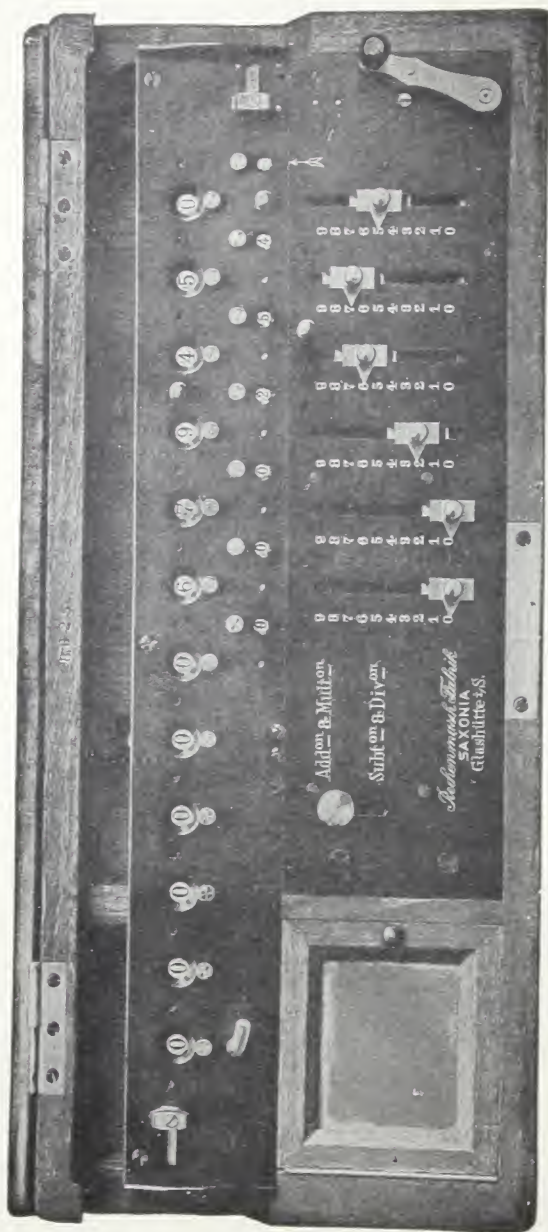
- 2940 Polar Planimeter of German silver. The tracer arm is divided in $\frac{1}{2}$ millimetres and with proportion marks for any reduction scales to be indicated at will. The slide is movable over the whole length of the tracer arm and has a vernier reading to $\frac{1}{10}$ millimeter. The conveniently accessible set screws, *a* and *b*, serve the purpose of setting the axis of the roller with the tracer arm parallel to the connection line of the tracing point *f* with the pivot *c* of the polar arm. With ball-pole and test plate fitted into morocco case, with lock, in such a manner that the instrument may be laid in, set to any proportion. If so desired, this Planimeter can be furnished divided into decimals of an inch, or foot, or any other desired scale. These Planimeters are of the best workmanship and guaranteed in every respect.....each, \$33.00

- 2942 Polar Planimeter, the same as No. 2940, with needle pole instead of ball pole and test rule, in morocco case, with clasp fastening..... “ 29.75



- 2945 Polar Planimeter, German silver, with Adjustable Tracing Arm, about 9 inches long, for measuring areas. With special arrangement for determining the mean height of Indicator Diagrams. Needle pole, test plate and directions, in morocco case.....each, \$35.75

For Indicator Scales, see list of scales.

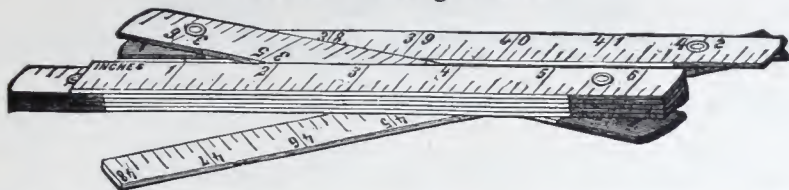


The "Saxonia" Reckoning Machine will accurately perform the following:

Multiplication, division, addition, subtraction, squaring and cubing. Has automatic devices which give a warning signal in case of wrong manipulation. Very compact and durable. All parts of the mechanism which are subjected to strain, are made of the hardest tool steel, so that the machine, with careful handling, will last a lifetime. The manipulation is so simple that the user can become familiar with same in a few minutes. Each machine fully guaranteed for two years. References from actual users can be had on application. Book of instructions with each machine.

- 2950 Saxonia Reckoning Machine, gives a product or dividend of 20 places, multiplier of 10, and quotient of 11 places.....each, 375.00
 2952 Saxonia Reckoning Machine, gives a product or dividend of 16 places, multiplier of 8, and quotient of 9 places..... " 300.00
 2954 Saxonia Reckoning Machine, gives a product or dividend of 12 places, multiplier of 6, and quotient of 7 places..... " 250.00
 2959 Van Effen's Tables of Sines and Co-sines to 7 places of decimals, a useful companion to Reckoning Machines, for the use of Surveyors and Engineers..... " 15.00

Pocket Folding Rules.



Spring Folding Pocket Rules, with metal tips, $\frac{5}{8}$ inch wide, measuring 7 inches when closed.

WHITE ENAMELED FINISH.

2960 Divided both sides, in inches and 16ths.

	2	3	4	5	6	8 feet
Each.....	\$.35	.45	.60	.70	.85	1.15

2962 Divided on one side, in inches and 16ths, millimeters on the other.

	2	3	4	5	6 feet
Each.....	\$.35	.45	.60	.70	.85

2964 Divided one side, in feet, inches and 16ths; on the other, in feet, 10ths and 100ths.

	4	5	6 feet
Each.....	\$.60	.70	.85

YELLOW FINISH.

2970 Divided both sides, in inches and 16ths.

	2	3	4	5	6	8 feet
Each.....	\$.25	.35	.50	.60	.75	1.00

2972 Divided one side in inches, and 16ths, millimeters on the other.

	2	3	4	5	6	8 feet
Each.....	\$.25	.35	.50	.60	.75	1.00

2974 Divided one side, in feet, inches and 16ths; on the other, in feet, 10ths and 100ths.

	3	4	5	6 feet
Each.....	\$.35	.50	.60	.75

Narrow Folding Rules.

Spring Folding Rules, with metal tips, $\frac{3}{8}$ in. wide, measuring 5 in. when closed.

WHITE ENAMELED FINISH.

2980 Divided both Sides, in inches and 16ths.

	2	3	4 feet
Each.....	\$.50	.60	.75

2982 Divided one side, in inches and 16ths, millimeters on the other.

	3	4 feet
Each.....	\$.60	.75

2984 Divided on one side, in feet, inches and 16ths; on the other, in feet, 10ths and 100ths

	3	4 feet
Each.....	\$.60	.75

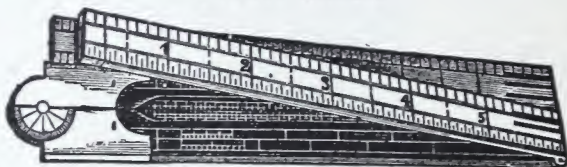


Narrow Folding Rules — Continued.

YELLOW FINISH.

2990	Divided both sides, inches and 16ths.			
	Each.....	² \$.30	³ .45	4 feet .60
2992	Divided one side, in inches and 16ths; millimeters on the other.			
	Each.....		³ \$.45	4 feet .60
2994	Divided one side, in feet, inches and 16ths; on the other, in feet, 10ths and 100ths.			
	Each.....		³ \$.45	4 feet .60

Pocket Rules.



3004

3004	Ivory Joint Rule, 2-feet, 4-fold, German Silver mounted, divided $\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$ inches, outside edge, foot in 100ths. The inside edges are beveled, and divided $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $1\frac{1}{4}$, $1\frac{1}{2}$ and 1 inch to the foot. The main joint is divided to 5 degrees for setting off angles.....each,	\$7.50
3008	Boxwood Joint Rule, 2-feet, 4-fold, brass mounted, divided like 3004.	1.25
3012	Common Boxwood Joint Rule, 2-feet, 4-fold, brass mounted, with scales on beveled edge $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, to the foot.....	.50
3014	Common Boxwood Joint Rule, 2-feet, 4-fold, 8ths and 16ths.....	.15
3018	Common Boxwood Joint Rule, 2-feet, 4-fold, brass bound, 8ths, 10ths, 12ths and 16ths.....	.30

Measuring Rods.

Made of hardwood, with brass trimmings, and are graduated into feet, inches and 8ths of an inch. Useful for all sorts of measuring around a building, such as floors, walls and window openings.



3020	Measuring Rod, 3 sections, 9 feet long, closes to 3 feet.....each,	\$5.00
3022	" " 3 " 12 " " " 4 "	6.00
3024	" " 3 " 15 " " " 5 "	7.50

(Continued on next page.)



Measuring Rods — Continued.



3030	Measuring Rod, 2 sections, 6 feet long, closes to 3 feet.....each, 3.00
3032	" " 2 " 8 " " " 4 " " 3.50
3034	" " 2 " 10 " " " 5 " " 4.00
3036	" " 2 " 12 " " " 6 " " 5.00

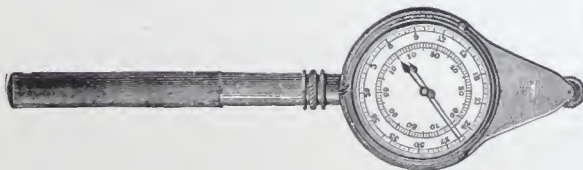
Shrinkage Rules.



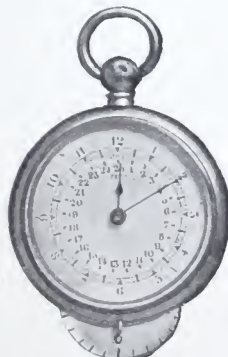
Made of hardwood, with brass tips, divided to $\frac{1}{8}$, $\frac{1}{10}$, $\frac{1}{12}$ and $\frac{1}{16}$ inches. Rules about $1\frac{1}{2}$ inches wide.

3039	Shrinkage Rule, $26\frac{3}{4}$ equal to 24 inches.....each, \$1.20
3041	Shrinkage Rule, 26 " " 24 " " 1.20
3042	Shrinkage Rule, $25\frac{1}{2}$ " " 24 " " 1.20
3043	Shrinkage Rule, 25 " " 24 " " 1.20
3044	Shrinkage Rule, $24\frac{1}{2}$ " " 24 " " 1.20
3045	Shrinkage Rule, $24\frac{3}{8}$ " " 24 " " 1.20
3046	Shrinkage Rule, $24\frac{1}{4}$ " " 24 " " 1.20
3047	Shrinkage Rule, $24\frac{3}{16}$ " " 24 " " 1.20

Map Measures.



3051



3053

3051	Map Measure, 5 in., graduations on cardboard dial, inches to miles, centimeters to kilometers.....each, \$3.20
3053	Map Measure, watch pattern, graduations on cardboard dial, reading on two circles to 25 feet, subdivided to $\frac{1}{8}$ of an inch..... " 2.15
3055	Map Measure, same as 3053, but dial reading on 3 circles to 100 feet, subdivided to $\frac{1}{8}$ of an inch..... " 6.00



Tally Registers, Pedometers, Passometers, Stop Watches.



3059



3064

- 3059 Tally Register, registers to 999.....each, \$2.50
 3061 Tally Register, with 3 dials, registering to 1,000 " 4.00
 3063 Tally Register, with 4 dials, registering to 10,000 " 5.50

For keeping count or tally by pressing on a knob.

- 3064 Pedometer, registers up to 12 miles in $\frac{1}{4}$ mileseach, \$3.50
 3065 Pedometer, registers up to 100 miles in $\frac{1}{4}$ miles " 4.50

For measuring distances traversed in walking. Size about the same as an ordinary pocket watch.

- 3066 Passometer, registering up to 25,000 steps.....each, \$4.50
 3067 Passometer, registering up to 100,000 steps..... " 6.00

For registering number of steps.

- 3068 Stop Watch, nickel cased, registering 30 minutes by one-fifth seconds. Stemwinding, engaging and disengaging mechanism.....each, \$6.00
 3069 Stop Watch, same as No. 3068, with double stop, so as to record elapsed time from first reading..... " 10.00



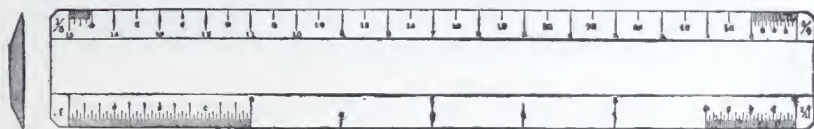
Flat Boxwood Scales.

U. S. Standard — Machine Divided.



Flat Scales, divided $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1 in. to the foot.

3072	6 in.....each, \$	.45	3082	White edges, 6 in...each, \$	.70
3073	12 in.....	.70	3083	White edges, 12 in... "	1.15
3074	12½ in.....	.80	3084	White edges, 12½ in... "	1.25
3078	18 in.....	1.35	3088	White edges, 18 in... "	2.10
3079	24 in.....	1.75	3089	White edges, 24 in... "	2.75



Flat Scales, divided $\frac{3}{8}$, $\frac{3}{4}$, $1\frac{1}{2}$, 3 in. to the foot.

3119	6 in.....each, \$	.45	3129	White edges, 6 in...each, \$	.70
3120	12 in.....	.70	3130	White edges, 12 in... "	1.15
3121	18 in.....	1.35	3131	White edges, 18 in... "	2.10
3122	24 in.....	1.75	3132	White edges, 24 in... "	2.75



Flat Scales, divided on both sides, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1 in. and $\frac{3}{8}$, $\frac{3}{4}$, $1\frac{1}{2}$, 3 in. to the foot.

3200	6 in.....each, \$	.80	3210	White edges, 6 in...each, \$	1.35
3202	12 in.....	1.20	3212	White edges, 12 in... "	2.00
3204	12½ in.....	1.35	3214	White edges, 12½ in... "	2.25
3206	18 in.....	2.15	3216	White edges, 18 in... "	3.40
3208	24 in.....	3.00	3218	White edges, 24 in... "	4.60

Paper Scales.

3215	Cardboard, 18 in. long, full divided, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, 3 in. to the foot, or 10, 20, 30, 40, 50, 60 parts to the inch.....each, \$.20
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Only one kind of division on each scale.



Flat Boxwood Scales--Continued.

U. S. Standard—Machine Divided.

Flat Scales, divided $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1 in. to the foot. (Opposite bevels.)

3230	12 in.....each, \$.70	3240	White edge, 12 in...each, \$1.15
3234	12 $\frac{1}{2}$ in..... " .80	3244	White edge, 12 $\frac{1}{2}$ in.. " 1.25

Flat Scales, $\frac{3}{8}$, $\frac{1}{2}$, $1\frac{1}{2}$, 3 in. to the foot. (Opposite bevels.)

3242	12 in.....each, \$.70	3252	White edge, 12 in...each, \$1.15
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Flat Scale, divided 10x50 parts to the inch. (Opposite bevels.)

3280	12 in.....each, \$.70	3290	White edge, 12 in...each, \$1.15
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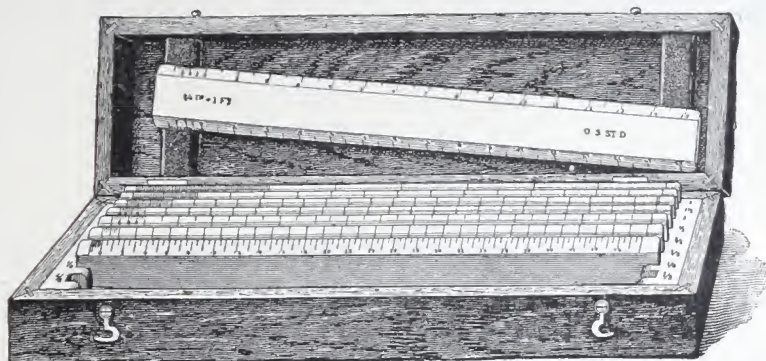
Flat Scales, divided in decimal parts of inches.

			Each
3312	6 in., 10x 50.....each, \$.45	3322 White edge, 6 in., 10x 50. \$.70
3313	6 in., 20x 40..... "	.45	3323 White edge, 6 in., 20x 40. .70
3314	6 in., 30x 60..... "	.45	3324 White edge, 6 in., 30x 60. .70
3315	6 in., 80x100..... "	.70	3325 White edge, 6 in., 80x100. .90
3316	12 in., 10x 50..... "	.70	3326 White edge, 12 in., 10x 50. 1.15
3317	12 in., 20x 40..... "	.70	3327 White edge, 12 in., 20x 40. 1.15
3318	12 in., 30x 60..... "	.70	3328 White edge, 12 in., 30x 60. 1.15
3319	12 in., 80x100..... "	1.10	3329 White edge, 12 in., 80x100. 1.50

Flat Scales, divided in decimal parts of feet.

3360	12 in., 100x 500.....each, \$.80	3370	White edge, 100x 500, each, \$1.25
3362	12 in., 200x 400..... " .80	3372	White edge, 200x 400, " 1.25
3364	12 in., 300x 600..... " .80	3374	White edge, 300x 600, " 1.25
3366	12 in., 800x1000..... " 1.25	3376	White edge, 800x1000, " 1.75

Flat Boxwood Scales in Sets.
U. S. Standard—Machine Divided.



Set of 4 Scales in Case, divided $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1 in. to the foot.

4000	12 in.....each,	\$4.25	4010	White edge, 12 in...each,	\$6.25
4002	18 in.....	7.75	4012	White edge, 18 in... "	10.75

Set of 8 Scales in Case, divided $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, 3 in. to the foot.

4005	12 in.....each,	\$7.50	4015	White edge, 12 in..each,	\$11.50
4007	18 in.	14.25	4017	White edge, 18 in.. "	20.25

Set of 12 Scales in Case, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, 2, 3, 4, 6 in. to the foot, and $\frac{1}{16}$ in. full size.

4020	12 in.....each,	\$11.00	4030	White edge, 12 in..each,	\$17.00
4022	18 in.....	21.00	4032	White edge, 18 in.. "	30.00

Set of 6 Scales in Case, divided 10, 20, 30, 40, 50, 60 parts to the inch.

4034	12 in.each,	\$6.00	4044	White edge, 12 in...each,	\$9.00
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Set of 8 Scales in Case, divided 10, 20, 30, 40, 50, 60, 80, 100 parts to the inch.

4036	12 in.....each,	\$9.00	4046	White edge, 12 in..each,	\$13.00
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The above Scales, in Sets, are put up in nicely finished, hardwood boxes. The scales have the same divisions on both edges (one edge reading from right to left, the other edge reading from left to right.)

Other and special divisions at same price (send sketch for special divisions.)



Boxwood Triangular Scales. U. S. Standard—Machine Divided.



Triangular Scales, divided $\frac{3}{8}$, $\frac{3}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, 3 in. to the foot,
and one edge 16 to the inch.

4050	6 in.....	each, \$.60	4060	White edges, 6 in..each,	\$1.50
4052	12 in.....	" .90	4062	White edges, 12 in.. "	2.40
4054	18 in.....	" 2.40	4064	White edges, 18 in.. "	4.50
4056	24 in.....	" 4.20	4066	White edges, 24 in.. "	6.50

Triangular Scales, divided $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1, $\frac{3}{4}$, $1\frac{1}{4}$, 3, 2 and 4 in. to the foot,
and one edge 16 to the inch.

4058	12 in.....	each, \$.90	4068	White edges, 12 in. each,	\$2.40
4059	18 in.....	" 2.40	4069	White edges, 18 in.. "	4.50



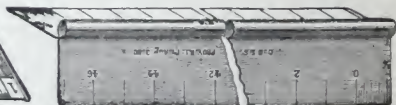
Triangular Scales, divided 10, 20, 30, 40, 50, 60 parts to the inch.

4070	6 in.....	each, \$.60	4080	White edges, 6 in..each,	\$1.50
4072	12 in.....	" .90	4082	White edges, 12 in.. "	2.40
4074	18 in.....	" 2.40	4084	White edges, 18 in.. "	4.50
4076	24 in.....	" 4.20	4086	White edges, 24 in.. "	6.50

Triangular Scales, divided 20, 30, 40, 50, 60, 80 parts to the inch.

4090	6 in.....	each, \$.60	5000	White edges, 6 in..each,	\$1.50
4092	12 in.....	" .90	5002	White edges, 12 in.. "	2.40
4094	18 in.....	" 2.40	5004	White edges, 18 in.. "	4.50
4096	24 in.....	" 4.20	5006	White edges, 24 in.. "	6.50

5010	Scale Guard, for triangular scales.....	" .20
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5014	Metal triangular scale, 12 in., same divisions as No. 4052.....	each, \$2.50
5015	Metal triangular scale, 12 in., " " " 4058.....	" 2.50
5016	Metal triangular scale, 12 in., " " " 4072.....	" 2.50
5017	Metal triangular scale, 12 in., " " " 4092.....	" 2.50
5020	Improved metal scale, 12 in., one edge $\frac{1}{8}$, other edge $\frac{1}{4}$ in. to the foot	" 1.25
5022	Improved metal scale, 12 in., " $\frac{1}{2}$ " $\frac{1}{4}$ " " 1.25	
5024	Improved metal scale, 12 in., " $\frac{3}{8}$ " $\frac{1}{8}$ " " 1.25	
5026	Improved metal scale, 12 in., " $\frac{3}{4}$ " $1\frac{1}{2}$ " " 1.25	
5028	Improved metal scale, 12 in., " $1\frac{1}{2}$ " 1 " " 1.25	
5029	Improved metal scale, 12 in., " $1\frac{1}{2}$ " 3 " " 1.25	

Special scales divided at short notice and at reasonable rates. Send sketch if ordering special scales.



Metric Scales.

Machine Divided.

Flat, divided on one side. Millimeters on one edge, and half Millimeters on the other:

5030	Flat Boxwood Metric Scale, 10 cm. long (4 in.).....each, \$	.50
5031	" " " " 20 " " (8 in.)..... " "	.60
5032	" " " " 30 " " (12 in.)..... " "	.75
5033	" " " " 50 " " (19 $\frac{3}{4}$ in.)..... " "	1.50
5035	Flat Boxwood, white edge, Metric Scale, 10 cm. long..... " "	.75
5036	" " " " " " 20 " "	1.00
5037	" " " " " " 30 " "	1.25
5038	" " " " " " 50 " "	2.25

Triangular Metric Scales, divided one scale on each edge as follows: .01, .02, .03, .05, .025, .0125:

5040	Triangular Boxwood Metric Scale, 20 cm long (8 in.).....each, \$	.75
5041	" " " " 30 " " (12 in.)..... " "	1.00
5042	" " " " 50 " " (19 $\frac{3}{4}$ in.)..... " "	2.75
5045	Triangular Boxwood, white edge, Metric Scale, 20 cm. long.....each, \$	2.00
5046	" " " " " " 30 " "	2.50
5047	" " " " " " 50 " "	5.00

Miscellaneous Scales.

5050	Flat Boxwood Scale, 12 in. long, divided $\frac{1}{8}$ and $\frac{1}{32}$ to inch.....each, \$	.75
5051	Flat Boxwood Scale, 12 in. long, divided $\frac{1}{16}$ and mm..... " "	.75
5052	Flat Boxwood, white edge, 12 in. long, divided $\frac{1}{8}$ and $\frac{1}{32}$ to inch...	1.25
5053	Flat Boxwood, white edge, 12 in. long, divided $\frac{1}{16}$ and mm..... " "	1.25

Pocket Scales.

U. S. Standard — Machine Divided.



Flat Scales, divided on both sides, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, 1 and $\frac{3}{8}$, $\frac{3}{16}$, $1\frac{1}{2}$, 3 in. to the foot, extra small size, convenient to carry in the vest pocket:

5055	Boxwood, 6 in., in leather sheath	each, \$	.65
5057	Boxwood, white edge, 6 in., in leather sheath..... " "		1.25
5059	Boxwood, 3 in., in leather sheath..... " "		.25

Flat Scales divided on both sides, 10, 20, 30 and 50 parts to the inch, small size, convenient to carry in vest pocket:

5060	Boxwood, 6 in., in leather sheath.....each, \$	.65
5062	Boxwood, white edge, 6 in., in leather sheath..... " "	1.25
5064	Boxwood, 3 in., in leather sheath..... " "	.25

Indicator Scales.

For Measuring Indicator Diagrams.

Flat Boxwood Indicator Scales, 4 in. long, divided and beveled on one edge:

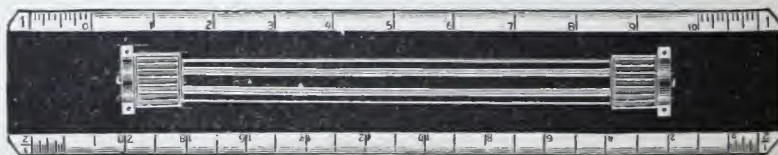
5070	Indicator Scale, 12 parts to the inch.....each,	\$.30	
5071	" " 24 " " "	" .30	5105
5072	" " 32 " " "	" .30	
5073	" " 64 " " "	" .30	5110
5074	" " 10 " " "	" .30	
5075	" " 20 " " "	" .30	
5076	" " 30 " " "	" .30	5115
5077	" " 40 " " "	" .30	
5078	" " 50 " " "	" .30	
5079	" " 60 " " "	" .30	
5080	" " 80 " " "	" .30	
5081	" " 100 " " "	" .30	

Special Scales made to order at short notice.

Parallel Rules.



5085	German Silver Rolling Parallel Rule:			
	9	12	15	18
Each,.....	\$8.50	10.00	12.00	15.00
				24 inches
				20.00
5090	Hard Rubber Rolling Parallel Rule:			
	9	12	15	18 inches
Each,.....	\$3.50	4.25	5.00	6.00
5095	Ebony Rolling Parallel Rule:			
	9	12	15	18 inches
Each	\$2.70	3.30	3.90	4.80



5100 Hardwood Rolling Parallel Rule, brass mountings, white edges, divided $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ inch scales:

	12	15	18 inches
Each.....	\$5.00	6.50	7.50

Parallel Rules—Continued.

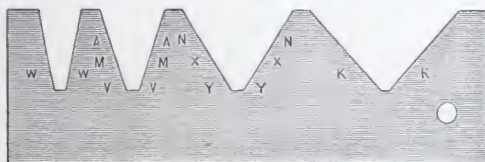


- 5105 Celluloid Folding Parallel Rule, nickel plated bars :
- | | | | | | | |
|-----------|--------|------|------|------|------|-----------|
| | 6 | 9 | 12 | 15 | 18 | 24 inches |
| Each..... | \$1.35 | 1.80 | 2.40 | 3.00 | 3.75 | 4.90 |
- 5110 Rubber Folding Parallel Rule, nickel plated bars :
- | | | | | | | |
|-----------|--------|-----|------|------|------|-----------|
| | 6 | 9 | 12 | 15 | 18 | 24 inches |
| Each..... | \$.75 | .90 | 1.20 | 1.50 | 1.75 | 2.40 |
- 5115 Ebony Folding Parallel Rule, nickel plated bars :
- | | | | | | | |
|-----------|--------|-----|-----|-----|------|-----------|
| | 6 | 9 | 12 | 15 | 18 | 24 inches |
| Each.. .. | \$.30 | .55 | .75 | .90 | 1.10 | 2.10 |

Lettering Triangles and Templets.



- 5125 Lettering Triangles, of rubber, 3 in set..... per set, \$1.20
 5126 Lettering Triangles, of transparent celluloid, 3 in set..... " 1.50



- 5130 Lettering Templets, of hard rubber, 3 in set..... per set, \$1.40
 5131 Lettering Templets, of transparent celluloid, 3 in set..... " 1.80



- 5135 Triangles, for roof pitches, of rubber, 6 in set..... per set, \$2.50
 5136 Triangles, for roof pitches, of transparent celluloid, 6 in set..... " 3.50



Triangles.



- 1 x 4 in. 1 x 5 in. 1 x 6 in. 1 x 8 in. 1 x 10 in. 1 x 12 in.
 5138 Triangles, for embankments, of rubber, 3 in set, 6 slopes.....per set, \$2.00

Transparent Celluloid Triangles, with Notches.



These notches greatly facilitate the picking up of the triangle and thereby lessen the liability to blur fresh ink lines.

- | | | | | | | | | | | | | | | |
|------|-------------|--------|-----|-----|-----|-----|-----|-----|------|------|------|------|--------|------|
| 5150 | 30° x 60° | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 14 | 16 | 18 in. | |
| | Each..... | \$.25 | .35 | .40 | .45 | .55 | .65 | .75 | .85 | 1.00 | 1.65 | 2.50 | 3.30 | |
| 5152 | 45° | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 |
| | Each, \$ | .30 | .35 | .45 | .55 | .65 | .75 | .95 | 1.10 | 1.35 | 1.65 | 1.90 | 2.20 | 3.15 |
| 5154 | 22½° x 67½° | 4 | | 6 | | 8 | | 10 | | 12 | | 14 | 16 in. | |
| | Each..... | \$.25 | | .40 | | .55 | | .75 | | 1.00 | | 1.65 | 2.50 | |

Mahogany Triangles, Ebony Lined.



- | | | | | | | | | | |
|------|-----------|--------|-----|-----|-----|------|------|--------|--------|
| 5160 | 30° x 60° | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 in. |
| | Each..... | \$.25 | .35 | .50 | .60 | .75 | 1.10 | 1.35 | 1.50 |
| 5163 | 45° | 5 | 7 | 9 | 11 | 13 | 15 | 17 in. | |
| | Each..... | \$.25 | .35 | .50 | .60 | 1.00 | 1.35 | 1.50 | |

Rubber Triangles.



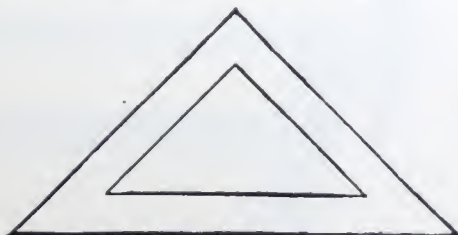
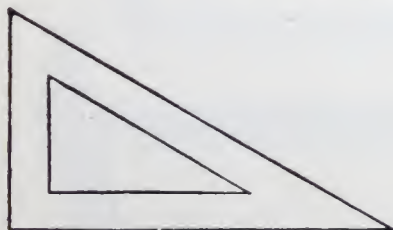
5165	30° x 60°	6	8	10	12	14	16 in.
	Each.....	\$.25	.35	.45	.60	1.10	1.50
5167	45°	5	7	9	11		13 in.
	Each.....	\$.35	.50	.75	1.10		1.60

Maple Triangles.



5170	30° x 60°	6	8	10	12	14 in.
	Each.....	\$.15	.20	.26	.30	.40
5173	45°	5	7	9	11	13 in.
	Each.....	\$.15	.20	.26	.30	.40

Steel Triangles, Nickel Plated.



5175	30° x 60°	6	7	8	10½	15 in.
	Each.....	\$3.20	3.50	3.85	4.25	6.50
5177	45°	5	6½	8	10	12 in.
	Each.....	\$3.20	3.50	4.25	5.50	6.50



Straight Edges.



Celluloid Straight Edges.

Made of Maple, lined on both sides with transparent celluloid.

5180	Square Edges,	18	24	30	36	42	48	60 in.
	Each.....	\$.75	1.00	1.25	1.50	1.80	2.20	4.00

Mahogany, Ebony Lined, Straight Edges.

5185	Square Edges,	30	36	42	48	60	72 in.
	Each.....	\$.60	.80	1.00	1.35	2.00	2.75

Ashwood, Maple Lined Straight Edges.

5190	One edge beveled,	30	36	42	48	60	72	84	96	120 in.
	Each.....	\$.45	.60	.75	1.00	1.50	2.00	2.75	3.75	5.00

Cherry Straight Edges.

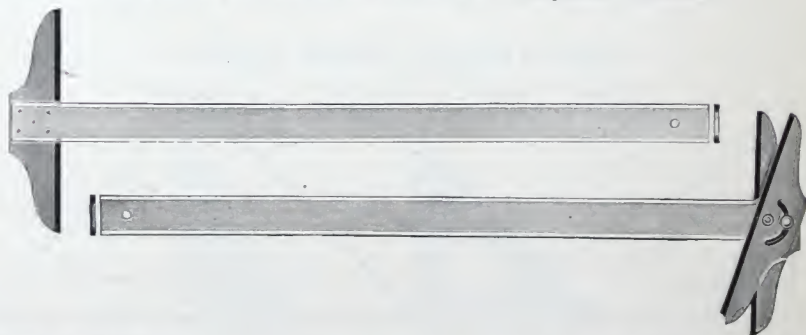
5195	One edge beveled,	24	30	36	42	48	60 in.
	Each.....	\$.25	.30	.40	.50	.65	1.25

Steel Straight Edges, Nickel Plated.

6000	One edge beveled,	18	24	30	36	42	48	60	72 in.
	Each.....	\$ 2.00	3.00	4.00	5.00	6.50	8.00	11.00	15.00

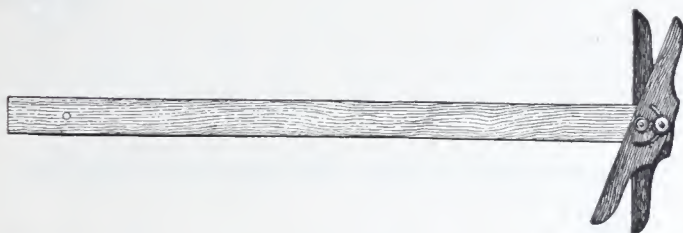
Celluloid T Squares.

Made of Maple, lined on both edges with transparent celluloid.



6010	Fixed Head,	12	18	24	30	36	42	48	54	60 in.
	Each.....	\$.90	1.10	1.50	1.85	2.15	2.50	3.00	4.00	5.00
6011	Shifting Head,	18	24	30	36	42	48	54	60 in.	
	Each.....	\$ 1.90	2.45	2.80	3.20	3.60	4.20	5.25	6.25	

Ashwood, Maple Lined, T Squares.



6015	Fixed Head,	12	24	30	36	42	48	54	60	72 in.
	Each.....\$	.35	.50	.60	.75	.90	1.10	1.35	1.75	2.00
6016	Shifting Head,	24	30	36	42	48	54	60	72 in.	
	Each.....\$	1.10	1.20	1.35	1.50	1.75	2.00	2.50	3.00	

Mahogany, Ebony Lined, T Squares.



6020	Fixed Head,	12	24	30	36	42	48	54	60 in.
	Each.....\$	.40	.90	1.10	1.30	1.50	1.75	2.10	2.60
6021	Shifting Head,	24	30	36	42	48	54	60 in.	
	Each.....\$	1.75	2.00	2.25	2.50	2.80	3.25	4.00	



Cherry T Squares.



6025	Fixed Head,	15	18	21	24	30	36	42	48	54 in.
	Each.....\$	.25	.28	.30	.35	.45	.55	.65	.90	1.20
6026	Shifting Head	15	18	21	24	30	36	42	48	54 in.
	Each.....\$	.70	.75	.80	.90	1.00	1.10	1.25	1.50	1.75

T Squares with Patent Micrometer Adjustment.



6030	Mahogany, ebony lined,	24	30	36	42	48	54	60 in.
	Each.....\$	1.65	1.90	2.15	2.40	2.65	3.15	3.65
6031	Maple, celluloid lined,	24	30	36	42	48	54	60 in.
	Each.....\$	2.50	2.85	3.25	3.70	4.35	5.00	6.50

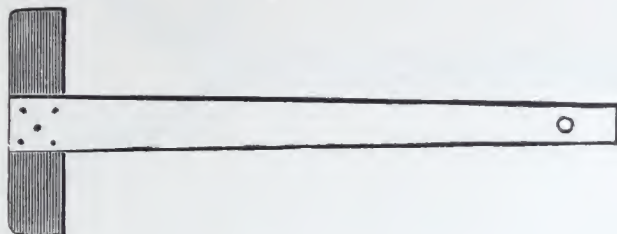
T Squares with Patent Micrometer Adjustment and Clamping Swivel.



6035	Mahogany, ebony lined,	24	30	36	42	48	54	60 in.
	Each.....\$	2.50	2.65	2.90	3.15	3.40	3.90	4.40
6036	Maple, celluloid lined,	24	30	36	42	48	54	60 in.
	Each.....\$	3.15	3.50	3.90	4.35	5.00	6.00	8.00



Tapered Maple T Squares.



6040	One edge beveled	30	36	42	48	54	60 in.
	Each.....	\$.80	1.00	1.20	1.50	2.00	2.50

Tapered Mahogany T Squares, Ebony Lined.

6041	One edge beveled	30	36	42	48	54	60 in.
	Each.....	\$ 1.20	1.40	1.60	1.85	2.25	2.75

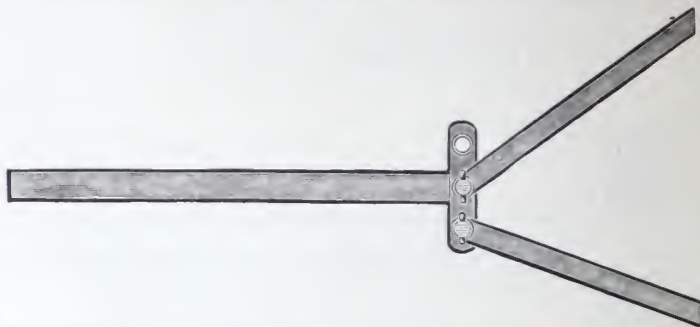
Steel T Squares, Fixed Head, with Nickel Plated Blade and Aluminum Head.



6045	Fixed Head	24	36	48 in.
	Each.....	\$ 3.50	5.00	6.50

Engravers' Steel T Squares, Steel Blade.

6050	Fixed Head	6	8	10	12 in.
	Each.....	\$ 1.25	1.50	2.00	2.50
6051	Shifting Head	6	8	10	12 in.
	Each.....	\$ 1.50	1.75	2.25	2.75



- | | | | |
|------|--|-------|--------|
| 6055 | Perspective Lineal, maple, 24 in., arms 10 in. long..... | each, | \$2.85 |
| 6056 | Perspective Lineal, " 30 " " 11 " " | " | 3.40 |
| 6057 | Perspective Lineal, " 36 " " 12 " " | " | 3.75 |



- | | | | |
|------|--|-------|--------|
| 6060 | Patent Adjustable Curve Ruler, 14½ in..... | each, | \$2.25 |
| 6061 | Patent Adjustable Curve Ruler, 30 in..... | " | 3.30 |



- | | | | | | | | | |
|------|---------------------------------------|-----|-----|-----|-----|-----|-----|--------------|
| 6065 | Weights for Splines, with finger..... | | | | | | | each, \$.85 |
| | | 18 | 24 | 30 | 36 | 42 | 48 | 60 in. |
| 6067 | Rubber Splines...each, \$.30 | .35 | .40 | .45 | .50 | .55 | .65 | .75 |
| 6068 | Celluloid Splines, " | .35 | .45 | .50 | .55 | .60 | .75 | |



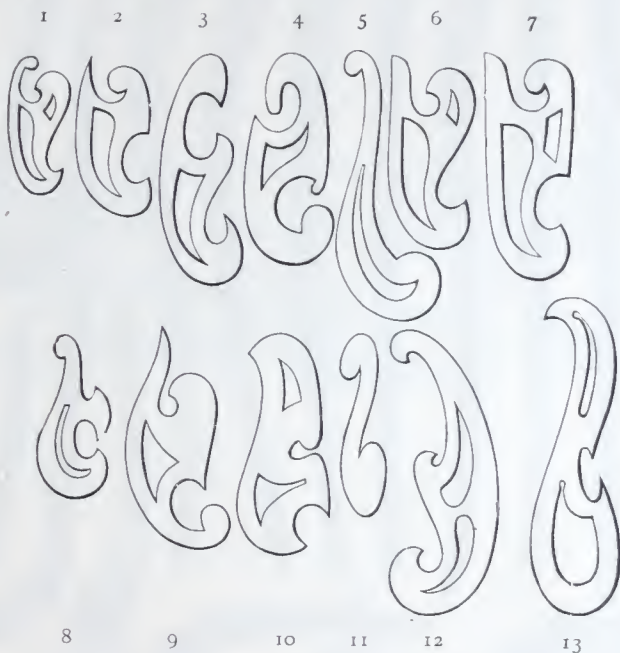
6070-6071

6075-6076

- | | | | |
|------|---|-------|--------|
| 6070 | Rubber Curve..... | each, | \$.75 |
| 6071 | Transparent Celluloid Curve..... | " | 1.00 |
| 6075 | Rubber Spiral Curve..... | " | 1.25 |
| 6076 | Transparent Celluloid Spiral Curve..... | " | 1.75 |

Irregular Curves.

Illustrations $\frac{1}{8}$ actual size.



Wood Curves.

6080 Wood Curves:

	1	2	3	4	5	6	7	8	9	10	11	12	13
Each, \$	.15	.20	.25	.25	.25	.25	.25	.25	.30	.30	.15	.35	.40

Hard Rubber Curves.

6082 Hard Rubber Curves:

	1	2	3	4	5	6	7	8	9	10	11	12	13
Each, \$	.30	.35	.40	.45	.40	.45	.50	.35	.50	.60	.30	.65	1.00

Transparent Celluloid Curves.

6084 Transparent Celluloid Curves:

	1	2	3	4	5	6	7	8	9	10	11	12	13
Each, \$	.45	.50	.60	.60	.60	.60	.60	.45	.60	.75	.45	.90	1.50



Copenhagen Ship Curves.



- 6085 Of Wood, set of 45 curves, in case.....per set, \$18.00
 6087 Of Rubber, set of 45 curves, in case....." 27.00
 6089 Of Transparent Celluloid, set of 45 curves, in case....." 36.00

For Prices of Single Curves see page 115.

Copenhagen Ship Curves — Continued.

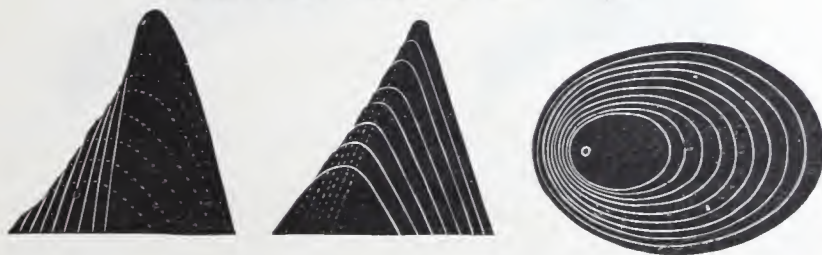
	Each	Each	Each
Single Curves, 1-9, of wood, \$	.70....of rubber, \$	1.00....of celluloid, \$	1.50
Single Curves, 10-16, of wood, .50....of rubber, .75....of celluloid,			1.00
Single Curves, 17-27, of wood, .35....of rubber, .60....of celluloid, .75			
Single Curves, 28-45, of wood, .20....of rubber, .30....of celluloid, .50			

Curves for Mechanical Engineers.



6090	Wood, set of 10 curves, in box.....per set,	\$3.20
6092	Hard Rubber, set of 10 curves, in box.....	4.80
6094	Celluloid, set of 10 curves, in box.....	8.00

Hyperbolas, Parabolas and Ellipses.



6095	Hyperbolas, 8 in set, from 2 to 5½ inches :		
	Celluloid, per set, \$2.75	Rubber, per set, \$2.25	Wood, per set, \$1.50
6096	Parabolas, 8 in set, from 1¼ to 5½ inches :		
	Celluloid, per set, \$2.75	Rubber, per set, 2.25	Wood, per set, 1.50
6007	Parabolas, 8 in set, from 3¼ to 14¼ inches :		
	Celluloid, per set, \$6.00	Rubber, per set, 5.50	Wood, per set, 3.00
6098	Ellipses, 6 in set, from 2 to 4½ inches :		
	Celluloid, per set, \$3.00	Rubber, per set, 1.50	Wood, per set, 1.25
6095	Ellipses, 8 in set, from 1½ to 6 inches :		
	Celluloid, per set, \$4.00	Rubber, per set, 2.50	Wood, per set, 2.00
6100	Ellipses, 10 in set, from 2 to 8 inches :		
	Celluloid, per set, \$5.00	Rubber, per set, 3.50	Wood, per set, 2.50



Railroad Curves.



- 6105 Rubber Railroad Curves, 10 in set, 12-120 inch radius, viz.:
12, 24, 36, 48, 60, 72, 84, 96, 108, 120, in wooden box.....per set, \$6.50
- 6106 Celluloid Railroad Curves, same as in 6105, in box..... " 9.00
- 6108 Rubber Railroad Curves, 17 in set, 12-60 inch radius, viz.:
12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60 inches,
in wooden box..... " 12.00
- 6110 Celluloid Railroad Curves, same as in 6108, in box..... " 15.00
- 6111 Rubber Railroad Curves, 40 in set, 3-120 inch radius, viz.:
3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 21, 24, 27, 30, 33, 36,
39, 42, 45, 48, 51, 54, 57, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114 120
inches radius, and 1 curve 1° to 100 feet scale=57.30 inches; 1
curve 2° to 100 feet scale=28.65 inches, in wooden box..... " 25.00
- 6112 Celluloid Railroad Curves, same as in No. 6111, in box..... " 38.00



- 6115 Rubber Railroad Curves, with Tangent, 41 in set, marked in degrees and inches
to scale, 100 feet=1 inch, viz.:
- | | | | |
|-------------------|------------------|------------------------------------|------------------|
| 0°.30'=114.59 in. | 3°.30'=16.37 in. | 6° =9.55 in. | 8°.30'=6.75 in. |
| 1° =57.30 in. | 3°.45'=15.28 in. | 6°.15'=9.17 in. | 8°.45'=6.55 in. |
| 1°.15'=45.84 in. | 4° =14.33 in. | 6°.30'=8.82 in. | 9° =6.37 in. |
| 1°.30'=38.20 in. | 4°.15'=13.48 in. | 6°.45'=8.49 in. | 9°.15'=6.20 in. |
| 1°.45'=32.74 in. | 4°.30'=12.73 in. | 7° =8.19 in. | 9°.30'=6.04 in. |
| 2° =28.65 in. | 4°.45'=12.07 in. | 7°.15'=7.91 in. | 9°.45'=5.88 in. |
| 2°.15'=25.47 in. | 5° =11.46 in. | 7°.30'=7.64 in. | 10° =5.74 in. |
| 2°.30'=22.92 in. | 5°.15'=10.92 in. | 7°.45'=7.40 in. | 10°.30'=5.48 in. |
| 2°.45'=20.84 in. | 5°.30'=10.42 in. | 8° =7.17 in. | 11° =5.22 in. |
| 3° =19.10 in. | 5°.45'=9.97 in. | 8°.15'=6.95 in. | 11°.30'=4.99 in. |
| 3°.15'=17.63 in. | | In wooden box.....per set, \$30.00 | |
- 6117 Celluloid Railroad Curves, with tangent, 41 in set, same as in No.
6115, in box.....per set, \$42.00
- | | |
|--|------|
| Single Rubber Railroad Curves, with tangent.....each, | .90 |
| Single Rubber Railroad Curves, without tangent..... " " | .75 |
| Single Celluloid Railroad Curves, with tangent..... " " | 1.20 |
| Single Celluloid Railroad Curves, without tangent..... " " | 1.00 |

Wooden Railroad Curves.

- 6120 **Wooden Railroad Curves**, 10 in set, 12-120 inch radius, viz.:
12, 24, 36, 48, 60, 72, 84, 96, 108, 120, in wooden box.....per set, \$3.50
- 6122 **Wooden Railroad Curves**, 17 in set, 12-60 inch radius, viz.:
12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60 in. " 6.00
- 6124 **Wooden Railroad Curves**, 44 in set, 3-200 inch radius, viz.:
3, 3½, 4, 4½, 5, 5½, 6, 6½, 7, 7½, 8, 8½, 9, 9½, 10, 12, 14, 16, 18, 20, 22,
24, 27, 30, 33, 36, 39, 42, 48, 54, 60, 66, 72, 78, 84, 90, 100, 110, 120,
130, 140, 160, 180, 200 in., in wooden box..... " 12.00
Single Wooden Curves.....each, .45

Metal Railroad Curves.

Finished with the same radius on both edges.

- 6126 **Metal Railroad Curves**, 100 in set, 2-300 inch radius, viz.:
2, 2½, 2¾, 3, 3½, 3¾, 4, 4½, 4¾, 5, 5½, 5¾, 6, 6½, 6¾, 7, 7½, 7¾, 8, 8½, 8¾, 9, 9½, 9¾, 10, 10½, 10¾, 11, 11½, 11¾, 12, 12½, 12¾, 13, 13½, 14, 14½, 15, 15½, 16, 16½, 17, 17½, 18, 18½, 19, 19½, 20, 20½, 21, 21½, 22, 22½, 23, 23½, 24, 24½, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 40, 42, 44, 46, 48, 50, 55, 60, 65, 70, 80, 90, 100, 120, 140, 160, 200, 240, 300, complete set of 100 curves.....per set, \$23.00
Any of above curves, 75 in set..... " 18.75
Any of above curves, 50 in set..... " 14.00
Any of above curves, 25 in set..... " 8.00
- 6128 **Metal Railroad Curves**, 94 in set, marked in degrees and inches to scale, 100 feet to 1 inch, viz.:
- | | | | | | |
|-----------------|----------------|----------------|----------------|----------------|----------------|
| 0° 15' = 229.18 | 2° 10' = 26.45 | 4° 50' = 11.86 | 8° 45' = 6.55 | 12° 45' = 4.50 | 18° 30' = 3.11 |
| 0° 20' = 171.89 | 2° 20' = 24.56 | 5° = 11.46 | 9° = 6.37 | 13° = 4.42 | 19° = 3.03 |
| 0° 25' = 137.51 | 2° 30' = 22.92 | 5° 15' = 10.92 | 9° 15' = 6.20 | 13° 15' = 4.33 | 19° 30' = 2.95 |
| 0° 30' = 114.59 | 2° 40' = 21.49 | 5° 30' = 10.42 | 9° 30' = 6.04 | 13° 30' = 4.25 | 20° = 2.88 |
| 0° 35' = 98.22 | 2° 50' = 20.22 | 5° 45' = 9.97 | 9° 45' = 5.88 | 13° 45' = 4.18 | 21° = 2.74 |
| 0° 40' = 85.94 | 3° = 19.10 | 6° = 9.55 | 10° = 5.71 | 14° = 4.10 | 22° = 2.62 |
| 0° 45' = 76.39 | 3° 10' = 18.10 | 6° 15' = 9.17 | 10° 15' = 5.60 | 14° 15' = 4.03 | 23° = 2.51 |
| 0° 50' = 68.76 | 3° 20' = 17.19 | 6° 30' = 8.82 | 10° 30' = 5.45 | 14° 30' = 3.96 | 24° = 2.40 |
| 0° 55' = 62.60 | 3° 30' = 16.37 | 6° 45' = 8.49 | 10° 45' = 5.34 | 14° 45' = 3.90 | 25° = 2.31 |
| 1° = 57.30 | 3° 40' = 15.63 | 7° = 8.19 | 11° = 5.22 | 15° = 3.83 | 26° = 2.22 |
| 1° 10' = 49.11 | 3° 50' = 14.95 | 7° 15' = 7.91 | 11° 15' = 5.10 | 15° 30' = 3.71 | 27° = 2.14 |
| 1° 20' = 42.97 | 4° = 14.33 | 7° 30' = 7.64 | 11° 30' = 4.99 | 16° = 3.59 | 28° = 2.07 |
| 1° 30' = 38.20 | 4° 10' = 13.75 | 7° 45' = 7.40 | 11° 45' = 4.88 | 16° 30' = 3.48 | 29° = 2.00 |
| 1° 40' = 34.38 | 4° 20' = 13.23 | 8° = 7.17 | 12° = 4.78 | 17° = 3.38 | 30° = 1.93 |
| 1° 50' = 31.25 | 4° 30' = 12.74 | 8° 15' = 6.95 | 12° 15' = 4.69 | 17° 30' = 3.29 | |
| 2° = 28.65 | 4° 40' = 12.28 | 8° 30' = 6.75 | 12° 30' = 4.59 | 18° = 3.20 | |

Complete set of 94 curves.....per set, \$23.50
Any of above curves, 75 in set..... " 20.25
Any of above curves, 50 in set..... " 15.00
Any of above curves, 25 in set..... " 8.75

Boxes for metal curves, extra, \$2.00 to \$4.00.



Horses, for Drawing Boards.



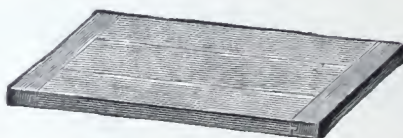
6150-6155



6157

6150	Wooden Horses, without slanting tops.....	per pair, \$3.00
6152	Wooden Horses, with slanting tops.....	" 3.50
6154	Wooden Horses, extra heavy, without tops.....	" 5.00
6155	Wooden Horses, extra heavy, with tops.....	" 5.75
6157	Adjustable Horses, best quality.....	" 7.00

Pine Drawing Boards.



6160	12 x 17 in., end battens, flush both sides.....	each, \$.65
6161	16 x 21 in., end battens, flush both sides.....	" .90
6162	18 x 24 in., end battens, flush both sides.....	" 1.00
6163	20 x 26 in., end battens, flush both sides.....	" 1.20
6164	23 x 31 in., end battens, flush both sides.....	" 2.00
6165	31 x 42 in., end battens, flush both sides.....	" 2.75

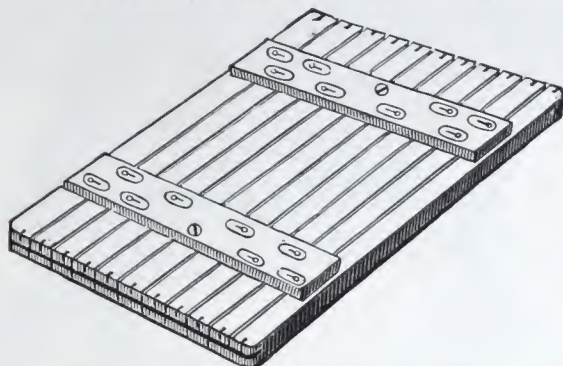


Hardwood ledges screwed to the back of the board. Screws set in oval washers to allow contraction or expansion.

6170	6172	6174	6176	6178	6180	6182
12x17 in.	16x21 in.	18x24 in.	20x26 in.	23x31 in.	31x42 in.	36x48 in.
Each..... \$1.10	1.25	1.40	1.50	2.50	4.00	6.00
6184	6188	6189	6190	6192	6194	
36x60 in.	36x72 in.	42x60 in.	42x72 in.	42x84 in.	48x84 in.	
Each..... \$9.00	10.80	10.60	12.60	14.70	16.80	



Drawing Boards—Continued.



Superfine, grooved back, hardwood ledges screwed to the back of the board.

6210	6212	6214	6216	6218	6220
16x21 in.	20x26 in.	23x31 in.	31x42 in.	36x48 in.	36x60 in.
Each, \$2.50	3.20	4.00	6.50	9.00	12.00

Adjustable Drawing Tables.

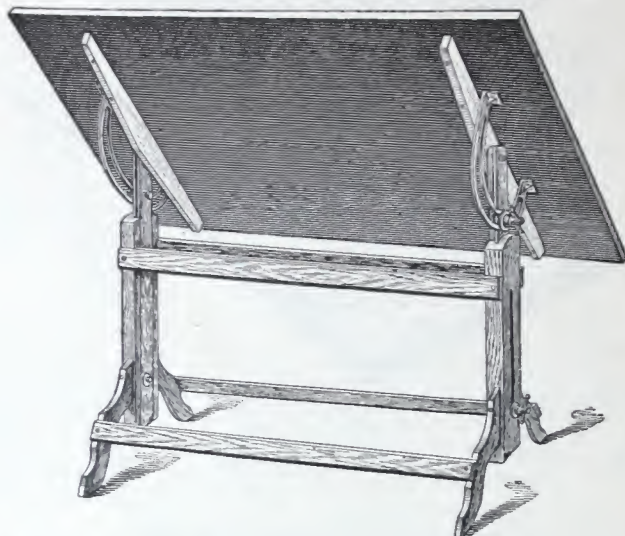


The Normal Adjustable Drawing Table can be raised, lowered, or set at an inclination instantly, by simply loosening the nut of the central rod, which moves in slots of the legs, as readily seen from the illustration. The Drawing Board can be detached and the trestles folded up, occupying but little more space than an ordinary drawing board, a great advantage if the table is not used constantly, as it can be put out of the way or set up in a few minutes. Various boards can be used on the same stand.

6225	With Board, 23 x 31 in.....	each, \$7.00
6227	With Board, 31 x 42 in.....	" 9.00
6229	With Board, 33 x 55 in.....	" 12.00
6231	With Board, 36 x 48 in.....	" 14.00
6233	With Board, 42 x 60 in.....	" 20.00



Adjustable Drawing Tables — Continued.



The Comfort Adjustable Drawing Stand is provided with a slide for raising or lowering the board, and has an iron arc attached, by which the board can be set at any inclination desired for a standing or sitting position; it can be folded up when not in use.

6240	With Board, 31 x 42 in.....	each, \$9.00
6242	With Board, 23 x 31 in.....	" 7.00



The "Bleecker" Adjustable Drawing Table consists of a Hardwood Folding Trestle and a Drawing Board of white pine. Can be raised, lowered or tilted to any desired angle.

6245	With Board, 31 x 32 in.....	each, \$10.00
6247	With Board, 33 x 55 in.....	" 13.00
6249	With Board, 36 x 60 in.....	" 15.00

Academy Drawing Tables.



6250



6256

- | | | | |
|------|---|-------|--------|
| 6250 | Ash top, 23 x 26 in..... | each, | \$6.50 |
| 6251 | Same as 6250, with folding arm and plain shelf..... | " | 7.00 |
| 6252 | Same as 6250, with drawer, shelf and folding arm..... | " | 8.00 |

Academy Drawing Tables, with Revolving Top.

- | | | | |
|------|---|-------|--------|
| 6255 | Ash top, 23 x 26 in..... | each, | \$7.50 |
| 6256 | Same as 6255, with folding arm and plain shelf..... | " | 8.00 |
| 6258 | Same as 6255, with drawer, shelf and folding arm..... | " | 9.00 |



- | | | | |
|------|--|-------|---------|
| 6260 | Iron Stand Drawing Table, with hardwood top, 30 x 36 in., can be tilted to any angle and can be raised or lowered by releasing the steel spring. Vertical adjustment, 30 to 40 in., and with drawer as in cut | each, | \$16.50 |
| 6262 | Adjustable Drawing Table, same as No. 6260, but with a 2-drawer cabinet in place of single drawer. Top drawer 25 inches long, 13 inches wide and 1½ inches deep; lower drawer 26 inches long, 13 inches wide and 2½ inches deep..... | " | 19.00 |



Adjustable Drawing Tables.



36 x 48 in.....each,	\$21.00
36 x 60 in..... "	23.00
36 x 72 in..... "	24.00
42 x 60 in..... "	24.00
42 x 72 in..... "	25.00
48 x 72 in..... "	28.00

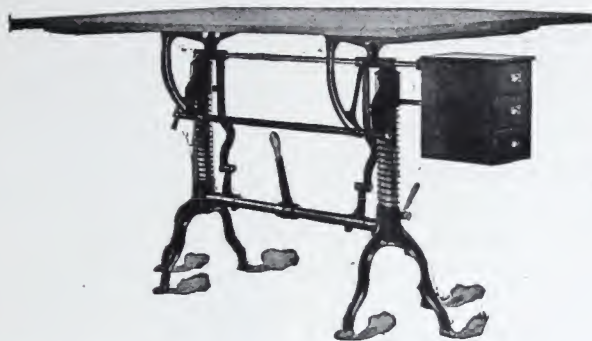
6264 Iron Stand Drawing Table, of rigid construction, very easily adjusted, can be tilted to any angle, and can be adjusted in height from 30 to 45 inches. The vertical adjustment is accomplished by a rack and pinion movement, operated by a crank as shown in illustration. The table tops are made of well seasoned white pine.



36 x 48 in....each,	\$31.00
36 x 60 in.... "	33.00
36 x 72 in.... "	34.00
42 x 60 in.... "	34.00
42 x 72 in.... "	35.00
48 x 72 in.... "	38.00
2 Drawer Cabinet, for any of above sizes, each,	\$2.00
3 Drawer Cabinet, for any of above sizes, each,	\$3.00

6266 Iron Stand Drawing Table, with drawing board top made of well seasoned white pine. Can be tilted to any angle and can be raised or lowered by means of a rack and pinion operated by a foot lever, which also serves as a foot-rest. This table has the tube and spring construction, which prevents the table from dropping when the clamps are released, and also assists the operator to raise the table top. All iron work baked enamel. Table can be raised from 30 to 45 inches in height.

Adjustable Drawing Tables — Continued.

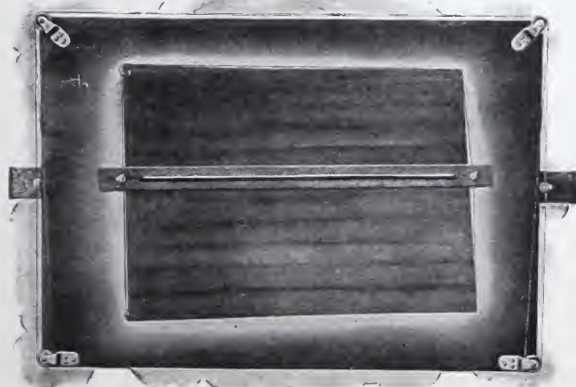


6268 Iron Stand Drawing Table, of heavy construction, with drawing board top made of well seasoned pine. Can be tilted to any angle and can be raised or lowered from 30 to 42 inches. Brass tubes are encircled by oil tempered steel springs which support the top when clamps are released, and also assist the operator to raise or lower top. In the larger sizes the iron framework is spread so that the proportion of standards to top is always the same:

36 x 48 in..each, \$36.00	42 x 60 in..each, \$39.00	48 x 72 in..each, \$43.00
36 x 60 in.. " 38.00	42 x 72 in.. " 40.00	48 x 84 in.. " 45.00
36 x 72 in.. " 39.00	42 x 84 in.. " 43.00	48 x 96 in.. " 48.00
	42 x 96 in.. " 45.00	

Foot rest, \$1.00 extra. 2 drawer cabinet, each \$2.00. 3 drawer cabinet, each \$3.00

Automatic T Square.



AUTOMATIC T SQUARE ATTACHED TO DRAWING BOARD. FRONT AND REAR VIEW.

For description, see page 124.



Automatic T Square—Continued.

6280 Automatic T Square, consists of a hardwood straight edge, attached to the board by means of wires and pulleys, and enables the operator to move the straight edge up or down the board with a perfectly parallel movement. It is easily attached to any board in the manner shown in illustration.

42 in. Straight Edge, complete with attachments, ready to put on..	each, \$5.00
48 in. Straight Edge, complete with attachments, ready to put on..	" 5.25
54 in. Straight Edge, complete with attachments, ready to put on..	" 5.50
60 in. Straight Edge, complete with attachments, ready to put on..	" 5.75
72 in. Straight Edge, complete with attachments, ready to put on..	" 6.00
84 in. Straight Edge, complete with attachments, ready to put on..	" 6.50
96 in. Straight Edge, complete with attachments, ready to put on..	" 7.00
Attachments, complete without Straight Edge.....	" 4.00

Stools for Draftsmen.



6300 Hardwood Stool, wood seat, 30 or 36 in. high.....	each, \$1.50
6302 Hardwood Stool, wood seat, screw top.....	" 3.50
6310 Hardwood Stool, cane seat, 30 or 36 in. high.....	" 2.00
6312 Hardwood Stool, cane seat, screw top.....	" 3.75



Sectional Filing Cabinets.

No. 6320

For Filing Drawings, Tracings, Blue Prints, etc.



THREE SECTIONS, CAP AND DRAWER BASE.



THREE SECTIONS, CAP AND PLAIN BASE.



TWO SECTIONS: DRAFTING TABLE TOP AND CUT-OUT BASE.

The Sectional Filing Cases are made in sections of five drawers each, of uniform size, so that any number of sections procured at different times will fit perfectly. The finish is the same, so that in ordering cases they will always be the same color.

Each section is composed of five drawers, $2\frac{1}{8}$ inches deep, 32 inches wide, $42\frac{1}{2}$ inches long, inside measure, and the sections are $14\frac{1}{2}$ inches high, outside measure.

The Cap is moulded and has a neat finish. It is $3\frac{1}{2}$ inches high.

Bases: There are three styles of bases:

PLAIN BASE, $3\frac{1}{2}$ inches high.

CUT-OUT BASE, 6 inches high.

This base is cut out in front and sides, so that the cases may be used with a Drawing Board Top, allowing the draftsman to stand close to the board.

DRAWER BASE, has a drawer $5\frac{1}{2}$ inches deep and $9\frac{1}{2}$ inches high, outside measure.

The Cases. Made of well-seasoned plain oak, golden oak finish; the drawers are provided with a cover at the back to prevent the drawings curling up; they can be divided by partitions for smaller drawings if desired.

The Finish. Golden oak stain and filler; three coats of varnish, rubbed; copper-bronze drawer pulls and label holders.

THE DRAFTING TABLE TOP is of oak to match sections, with very best white pine DRAWING BOARD $38\frac{1}{2}$ " \times $49\frac{1}{2}$ ". The front of cap on which this board rests and to which it is fastened is 4" high and rear is 7" high. The height from floor of the Combination Drafting Table is in front 40", rear 43".

Section of Five Drawers.....each,	\$18.00
Cap.....	" 5.00
Drawer Base.....	" 7.00
Cut Out Base.....	" 5.00
Plain Base.....	" 3.50
Drafting Table Top (including board).....	" 8.00



Thumb Tacks.

Best quality German silver, with extra hardened screwed-in steel pins.

$\frac{3}{8}$ in. $\frac{7}{8}$ in. $\frac{1}{2}$ in. $\frac{1}{8}$ in. $\frac{5}{8}$ in.



Round Heads,	6330	6332	6334	6336	6338
Per doz., on cork, \$	.35	.40	.50	.60	.70
Per gross, " "	3.50	4.00	5.00	6.00	7.00

- 6339 Best quality Thumb Tacks, German silver, $1\frac{1}{2}$ in. diameter, with extra long points, $\frac{1}{2}$ in. long, for fastening mounting boards, photos and other heavy boards.....per doz., \$.60 per gross, \$6.00



Beveled Heads,	6340	6342	6344	6346	6348
Per doz., on cork, \$	.40	.50	.60	.70	.80
Per gross, " "	4.00	5.00	6.00	7.00	8.00



Riveted Thumb Tacks.

These tacks are constructed so that the points cannot come through the head, as sectional view will plainly show.

Pat. 1892.	$\frac{3}{8}$ in.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.
	6350	6352	6354
Per doz.....	\$.15	.20	.25
Per gross.....	1.50	1.65	1.85
Brass,	6360	6362	6364
Per doz.....	.10	.12	.15
Per gross.....	1.00	1.15	1.25




"Record" Thumb Tacks.

IMPROVED CONSTRUCTION, which entirely overcomes the drawbacks customary to other tacks, i. e. the bending or breaking of the pins, or their penetrating the head of the tack; they supersede other low-priced tacks by superiority of material, uniformity of sizes and finish. Their heads are shaped so as to offer as little obstruction as possible to the free gliding of the T square-blade.



Diameter	$\frac{5}{16}$ in.	$\frac{3}{8}$ in.	$\frac{1}{2}$ in.
	6370	6372	6374
Per box of 100.....	\$.20	.25	.35
Per doz. boxes.....	2.00	2.50	3.50

Stamped Steel Tacks and Horn Centers.

			
	$\frac{5}{16}$ in.	$\frac{3}{8}$ in.	$\frac{1}{2}$ in.
	6380	6382	6384
Per doz.....	\$.08	.10	.12
Per box of 100, with tack lifter.....	.40	.50	.65



6388



6389



- 6388 Horn Center, plain, $\frac{1}{2}$ in.....each, \$.15
 6389 Horn Center, with German silver rim, $\frac{3}{4}$ in..... " .50

Higgins' Engrossing and Eternal Inks.



6390



6391

- 6390 Higgins' Engrossing Ink, a dense black indestructible ink, specially adapted for all important writings, records, engrossings, and for fancy penmanship, card writing, etc. Waterproof when dry:
- | | | |
|----------------------------|--------------------|--------------------------|
| 2 oz. bottles..... | per bottle, \$.20 | per doz. bottles, \$2.40 |
| $\frac{1}{2}$ Pint, \$.60 | Pint, 1.00 | Quart, 1.75 |
- 6391 Higgins' Eternal Ink, a fine, fluent carbon writing ink for general use:
- | | | |
|----------------------------|--------------------|--------------------------|
| 2 oz. bottles..... | per bottle, \$.10 | per doz. bottles, \$1.20 |
| $\frac{1}{2}$ Pint, \$.35 | Pint, .60 | Quart, 1.00 |



Liquid Drawing Inks.



- 6400 "Nassau" Liquid Waterproof Drawing Inks. All colors are waterproof and are very opaque; suitable for blue printing. Flow freely and will not dry in the pen. The **black** we mention especially, as lines drawn with this ink are absolutely **black** and opaque:

Black, Carmine. Blue, Green, Yellow, Brown.

Any of above colors in $1\frac{1}{2}$ oz. bottles... per bot., \$.25 per doz. bot. \$2.50
 $\frac{1}{2}$ Pint, \$1.90 Pint, \$3.25 Quart, \$5.00



- 6405 Higgins' American Drawing Inks :

Black Waterproof, Black, General (not waterproof), Carmine, Blue, Green, Yellow, Brown, Brick Red, Scarlet, Vermilion, Indigo, Orange, Violet:

Any of above colors..... per bot. \$.25 per doz. bot., \$3.00
 $\frac{1}{2}$ Pint, \$2.00 Pint, \$3.75 Quart, \$7.00

- 6410 Bourgeois' Drawing Ink, large..... per bottle, \$.50
 6412 Bourgeois' Drawing Ink, small..... " .25

Clover Inkstand.

PATENT APPLIED FOR.



HOLDS ANY DRAWING INK BOTTLE.

- 6420 The **Clover Inkstand** is a boon to users of drawing inks, who desire a bottle holder that is almost impossible to upset or in any way dislodge the bottles held therein. This bottle holder adjusts itself to hold the various shapes and sizes of bottles in which the different manufacturers put up their inks. Can be used with one, two or three bottles of any size, as each bottle is held independently of the others, and any of the bottles may be instantly removed by simply opening the clasp spring.....each, \$.50

Alteneider's Pen-Filling Inkstand.



- 5422 **Alteneider's Pen-Filling Inkstand.** This enables the draftsman to fill the ruling pen with one hand while holding triangles, etc. with the other....each, \$1.50



India Ink in Sticks.



6425-6427



6430-6431



6435



6437

6425	Lion Head, small.....	each, \$.15
6426	Lion Head, medium.....	" .25
6427	Lion Head, large.....	" .50
6430	Super-Super, small.....	" .50
6431	Super-Super, large.....	" 1.00
6435	Stork Ink.....	" 1.75
6436	Pearl Ink.....	" 1.75
6437	Double Dragon.....	" 2.00
6438	3 Kings and Moon.....	" 3.00



6439 Japan Ink, waterproof.....each, \$1.00

Liquid White, Process Inks, etc.



- 6440 Semple's White, Liquid :
 Per bottle, \$.25 per dozen bottles, \$2.40 per $\frac{1}{4}$ lb. jar, \$1.40
 6442 Bonny's White, Liquid :
 Per bottle, \$.25 per dozen bottles, \$2.40 per $\frac{1}{4}$ lb. jar, 1.40



SIZE OF JAR.



- 6445 Winsor & Newton's Permanent Chinese White..... per bottle, \$.25
 6446 Winsor & Newton's Permanent Chinese White, extra large... " .65
 6450 Winsor & Newton's Permanent Chinese White, in tubes.....each, .25
 6451 Winsor & Newton's Permanent Chinese White, in extra large tubes " .65
 6455 Winsor & Newton's Albanine.....per bottle, .25
 6456 Winsor & Newton's Process Black..... " .25
 6457 Winsor & Newton's Liquid Ovgall..... " .25
 6460 Retouching Varnish, for water colors.....per bottle, .25
 6461 Pure Gold Tablets, in cups.....each, 1.75
 6462 Pure Silver Tablets, in cups..... " .25
 6463 Moist Color, Gold, in pans..... " .15
 6464 Moist Color, Silver, in pans..... " .15



Winsor & Newton's Moist Water Colors.



SERIES I.

6470	Whole Pans.....	per doz., \$3.00	each, \$.25
	Half Pans.....	" 1.65	" .14
	Antwerp Blue	Emerald Green	Olive Green
	Bistre	Flake White	Payne's Gray
	Blue Black	Gamboge	Permanent Blue
	Brown Ochre	Hooker's Grn. No. 1	Prussian Blue
	Brown Pink	Hooker's Grn. No. 2	Prussian Green
	Burnt Sienna	Indian Red	Raw Sienna
	Burnt Umber	Indigo	Raw Sienna, Pale
	Charcoal Gray	Italian Pink	Raw Umber
	Chinese White	Ivory Black	Roman Ochre
	Chrome Lemon	King's Yellow	Sap Green
	Chrome Yellow	Lamp Black	Terre Verte
	Chrome Deep	Light Red	Vandyke Brown
	Chrome Orange	Mauve	Venetian Red
	Cologne Earth	Naples Yellow	Vermilion
	Davy's Grey	Neutral Tint	Yellow Lake
	Dragon's Blood	New Blue	Yellow Ochre

SERIES II.

6471	Whole Pans.....	per doz., \$6.00	each, \$.50
	Half Pans.....	" 3.00	" .25
	Alizarin Carmine	Crimson Lake	Rose Madder, Alizarin
	Alizarin Crimson	Indian Yellow	Rubens Madder
	Alizarin Green	Leitch's Blue	Ruby Madder, Alizarin
	Alizarin Orange	Mars Yellow	Scarlet Lake
	Alizarin Scarlet	Neutral Orange	Scarlet Madder, Alizarin
	Alizarin Yellow	Orange Vermilion	Scarlet Vermilion
	Brown Madder	Permanent Brown	Sepia
	Carmine Lake	Purple Lake	Warm Sepia
	Cerulean Blue	Roman Sepia	



Winsor & Newton's Moist Water Colors—Continued.

SERIES III.

6472	Whole Pans.....	per doz., \$7.50	each, \$.63
	Half Pans.....	" 3.75	" .32
	Cadmium Lemon	Emer'ld Oxide Chromium	Oxide of Chromium
	Cadmium Yellow, ex. pale	French Blue	" " Transp't
	Cadmium Yellow, pale	Indian Purple	Permanent Mauve
	Cadmium Yellow, middle	Intense Blue	Permanent Violet
	Cadmium Yellow	Lemon Yellow	Pure Scarlet
	Cadmium Orange	Mars Orange	Ultramarine Ash (grey)
	Cobalt Blue	Mineral Violet	Violet Carmine
	Cobalt Green	Orient Yellow	Viridian (Veronese Green)
	Cobalt Violet		

SERIES IV.

6473	Whole Pans.....	per doz., \$12.75	each, \$1.07
	Half Pans.....	" 6.38	" .54
	Aureolin	Gallstone or Yel. Carmine	Purple Madder
	Aurora Yellow	Madder Carmine	Rose Dore
	Burnt Carmine	Madder Lake	Rose Madder
	Carmine	New Olive Green	Rose Madder, pink shade
	Cobalt Yellow	Pink Madder	Scarlet Madder
	Field's Orange Vermilion	Primrose Aureolin	Yel. Carmine or Gallstone

SERIES V.

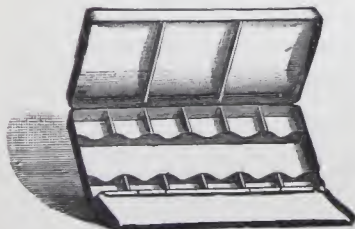
6474	Whole Pans.....	each, \$1.50
	Half Pans.....	" .75

Small Ultramarine Ash (Blue)

Winsor & Newton's Colors, in whole or half cakes, tubes or half tubes, same price as pans or half pans.

Books of washes of the above colors..... each, \$.25

Japanned Tin Boxes, for Moist Water Colors.



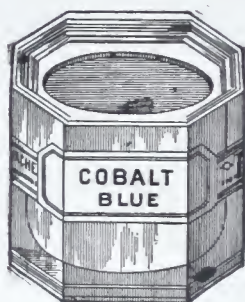
6475 For 12 16 20 24 Half Pans.
Each, \$.80 .90 1.05 1.15

6476 For 12 16 20 24 Whole Pans.
Each, \$1.15 1.30 1.40 1.60



Bourgeois' French Moist Water Colors.

In Glass Pots and Collapsible Tubes.



POT.



TUBE.

They contain more than double the quantity in the *Whole Pans*, at nearly the same price. They are in a moist state and readily yield the full richness of tint upon the application of the moistened brush.

SERIES I.

6480 Glass Pots.....each, \$.30	Tubes.....each, \$.20
Antwerp Blue (Bleu Mineral)	Cassel Earth (Terre de Cassel)
Bistre (Bistre)	Cologne Earth (Terre de Cologne)
Blue Black (Bleu Noir)	Dragon's Blood (Sang de Dragon)
Black Lake (Laque Noir)	Extra Fine Black (Noir Extra Fin)
Brown Ochre (Ocre Brun)	Emerald Green (Cendre Verte)
Brown Pink (Stil de Grain Brun)	Emerald Blue (Cendre Bleu)
Burnt Italian Earth (Terre d'Italie Brûlée)	Gamboge (Gomme Gutte)
Burnt Sienna (Terre de Sienna Brûlée)	Golden Yellow (Jaune d'Or)
Burnt Umber (Terre d'Ombre Brûlée)	Green Lake (Laque Verte)
Cachemire Yellow (Jaune Cachemire)	Gold Ochre (Ocre d'Or)
Chinese White (Blanc de Zinc)	Hooker's Green (Vert Vegetal)
Chrome Green, Light (Vert de Chrome No. 3)	Indian Red (Rouge Indien)
Chrome Green, Medium (Vert de Chrome No. 2)	Indigo (Indigo)
Chrome Green, Deep (Vert de Chrome No. 1)	Ivory Black (Noir d'Ivoire)
Chrome Yellow, Lemon (Jaune de Chrome Citron)	Italian Pink (Stil de Grain Jaune)
Chrome Yellow, Light (Jaune de Chrome Clair)	Italian Earth (Terre d'Italie Naturelle)
Chrome Deep (Jaune de Chrome Foncé)	Lamp Black (Noir de Bougie)
	Light Red (Brun Rouge)
	Lyons Blue (Bleu de Lyon)
	Naples Yellow (Jaune de Naples)
	Naples Yellow, Greenish (Jaune de Naples Vert)
	Neutral Tint (Teinte Neutre)

Bourgeois' French Moist Water Colors — Continued.

SERIES I — Continued.

Olive Green (Vert Olive)	Red Lead (Rouge de Saturne)
Payne's Grey (Gris de Payne)	Sap Green (Verte de Vessie)
Paris Blue (Bleu de Paris)	Silver White (Blanc d'Argent)
Pearl Grey (Gris Perle)	Terra Verte (Terre Verte)
Peach Black (Noir de Pêche)	Vandyke Brown (Brun Vandyck)
Prussian Blue (Bleu de Prusse)	Venetian Red (Rouge Vénise)
Prussian Green (Vert de Prusse)	Vermilion, Light (Vermilion Clair)
Permanent White (Blanc Fixe)	Vermilion, Deep (Vermilion Foncé)
Raw Sienna (Terre de Sienna Naturelle)	Vine Black (Noir de Vigne)
Raw Umber (Terre d'Ombre Naturelle)	Yellow Lake (Laque Jaune)
Roman Ochre (Ocre de Ru)	Yellow Maize (Jaune Mais)
Red Ochre (Ocre Rouge)	Yellow Ochre (Ocre Jaune)

SERIES II.

6481 Glass Pots.....each, \$.50	Tubes.....each, \$.30
Brilliant Yellow (Jaune Brillant)	Sepia (Sepia Naturelle)
Burnt Lake (Laque Brûlée)	Strontian Yellow (Jaune ou de Strontiane)
Celestial Blue (Bleu Céleste)	Turkey Red (Rouge Turc)
Crimson Lake (Laque Carminée)	Ultramarine Blue, Light (Outremer Clair)
Crimson Lake, Dark (Laque Carminée Foncé)	Ultramarine Blue, Deep (Outremer Foncé)
Crimson Lake, Light (Laque Carminée Rose)	Violet Lake (Laque Violette)
Dahlia Lake (Laque Indienne au Dahlia)	Violet, Extra Light (Violette Clair)
Garnet Lake (Laque Grenat)	Violet, Extra Deep (Violette Foncé)
Moderate Lake (Laque Modérée)	Warm Sepia (Sepia Colorée)
Persian Lake (Laque de Perse)	Luminous Green, Blue (Vert Lumière Bleu)
Purple, Light (Pourpre Clair)	Luminous Green, Light " No. 2
Purple, Dark (Pourpre Foncé)	Luminous Green, Dark " No. 1
Scarlet Vermilion (Vermilion Ecarlate)	

SERIES III.

6482 Glass Pots.....each, \$.75	Tubes.....each, \$.40
Brown Madder (Brun Garance)	Madder Lake, Deep (Laque de Garance Foncé)
Cerulean Blue (Cœruleum)	Marine Blue (Bleu Marine)
Carmine (Carmin Fin)	Peacock Blue (Bleu Paon)
Chinese Orange (Grenadine)	Ponceau Lake (Laque Ponceau)
Cyprus Green, Light (Vert de Chypre Clair)	Rose Carthame, Light (Rose Carthame Clair)
Cyprus Green, Deep (Vert de Chypre Foncé)	Rose Carthame, Deep (Rose Carthame Foncé)
Dahlia Lake (Laque Dahlia)	Rose Madder (Laque de Garance Rose)
English Lake (Laque Anglaise)	Sevres Blue (Bleu de Sevres)
Emeraude Green (Vert Emeraude)	Scarlet Lake (Laque Ecarlate)
Geranium Rose (Géranium)	Tyrian Rose (Rose Tyrien)
Luminous Blue (Bleu Lumière)	Veronese Green (Vert Veronese)
Madder Lake, Light (Laque de Garance Clair)	Violet Carmine (Carmin Violette)
Malmaison Rose (Rose Malmaison)	



Bourgeois' French Moist Water Colors — Continued.

SERIES IV.

- | | | |
|------|---------------------------------|------------------------------------|
| 6483 | Glass Pots.....each, \$1.25 | Tubes.....each, \$.75 |
| | Cadmium, Lemon (Cadmium Citron) | Cobalt Blue (Bleu de Cobalt) |
| | Cadmium, Light (Cadmium Clair) | Cobalt Green (Verte de Cobalt) |
| | Cadmium, Medium (Cadmium Moyen) | Cobalt Violet (Violette de Cobalt) |
| | Cadmium, Yellow (Cadmium Jaune) | Indian Yellow (Jaune Indien) |
| | Cadmium, Deep (Cadmium Foncé) | Intense Blue (Blue Intense) |
| | Cadmium, Orange (Cadmium Rouge) | |

SERIES V.

- | | | |
|------|-------------------------------|----------------------------|
| 6484 | Glass Pots.....each, \$1.50 | Tubes.....each, \$1.00 |
| | Burnt Carmine (Carmin Brûlée) | Gallstone (Pierre de Fiel) |
| | Extra Carmine (Carmin Extra) | Saffron Yellow (Safran) |

SERIES VI.

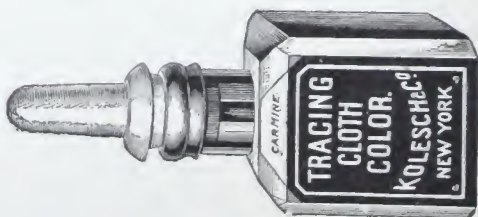
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|------|------------------------------------|------------------------|
| 6485 | Glass Pots.....each, \$2.25 | Tubes.....each, \$1.50 |
| | Madder Carmine (Carmin de Garance) | Smalt (Smalt) |



DOUBLE SIZE TUBES.

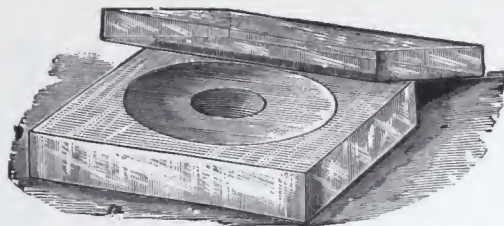
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| 6487 | Double Size Tubes.....each, \$.25 |
| | Chinese White (Blanc de Chine) Flake White (Blanc d'Argent) |

Liquid Tracing Cloth Colors.

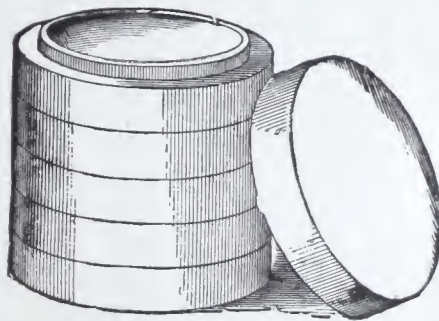


- | | | |
|------|--|-------------------------------------|
| 6490 | Will not wrinkle or soil the tracing cloth. | Can be applied with a brush or pen. |
| | Red, Blue, Yellow, Green, Brown. | |
| | Any of the above colors.....per bottle, \$.25 | per dozen bottles, \$3.00 |

Ink and Color Slabs and Tiles.



- 6496 Slate Ink Slab, with heavy glass cover, $3\frac{1}{2} \times 3\frac{1}{2}$ in.....each, \$.40



- 6500 Nests of Cabinet Saucers, 6 in set, $2\frac{3}{8}$ in.....each, \$.45
 6502 Nests of Cabinet Saucers, 6 in set, $2\frac{3}{4}$ in..... " .55
 6504 Nests of Cabinet Saucers, 6 in set, $3\frac{1}{4}$ in..... " .65
 6506 Nests of Cabinet Saucers, 6 in set, $3\frac{3}{4}$ in..... " .75



6510



6515

- 6510 Color Slabs, 3 wells and slope, 2×4 in.....each, \$.20
 6511 Color Slabs, 3 wells and 3 slopes, $2\frac{1}{2} \times 4$ in..... " .25
 6512 Color Slabs, 5 wells and 5 slopes, $4 \times 7\frac{1}{2}$ in..... " .60
 6515 Sloping Tile, 3 divisions, $2\frac{1}{2} \times 4$ in..... " .15
 6516 Sloping Tile, 4 divisions, 3×8 in..... " .30
 6518 Sloping Tile, 6 divisions, $3\frac{1}{8} \times 8$ in..... " .40
 6520 Sloping Tile, 8 divisions, $6 \times 7\frac{3}{4}$ in..... " .50
 6522 Sloping Tile, 10 divisions, $6 \times 7\frac{3}{4}$ in..... " .55
 6524 Sloping Tile, 12 divisions, $6 \times 7\frac{3}{4}$ in..... " .65

Water Color Brushes.



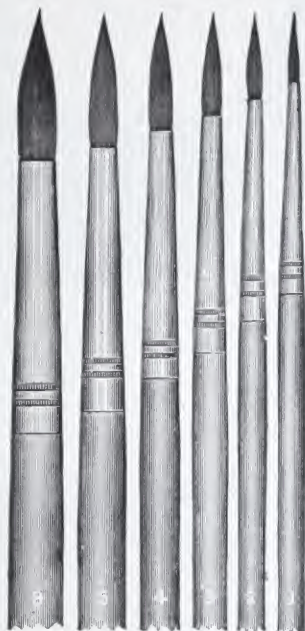
- 6525 Red Sable, Black Handles, with nickel plated ferrules, domestic manufacture :
- | | | | | | | | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| Nos. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Each, \$ | .15 | .15 | .18 | .25 | .30 | .35 | .45 | .50 | .60 | .70 | .90 | 1.15 | 1.50 |
- 6526 Red Sable, Winsor & Newton's, Ebony Handles, with Albata Ferrules :
- | | | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|------|
| Nos. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Each, \$ | .30 | .30 | .40 | .50 | .60 | .75 | .90 | 1.10 |
- 6527 Red Sable, Winsor & Newton's, Walnut Handles, with Nickel Ferrules :
- | | | | | | | | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| Nos. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Each, \$ | .18 | .20 | .25 | .30 | .35 | .40 | .50 | .70 | 1.00 | 1.35 | 1.70 | 2.10 | 2.50 |



Artists' Water Glasses.

- | | | | |
|------|-----------------------------------|----------|-----|
| 6530 | 2½ in. diameter, with 2 lips..... | each, \$ | .12 |
| 6531 | 3 in. diameter, with 2 lips | " | .25 |
| 6532 | 3½ in. diameter, with 2 lips..... | " | .30 |

Water Color Brushes — Continued.



6536 Camel Hair Brushes, with handles:

Nos.	1	2	3	4	5	6
Each,	\$.06	.06	.08	.10	.10	.12



6537 Camel Hair, Sky or Wash Brushes, with handles:

Nos.	1	2	3	4	5	6
Each,	\$.15	.20	.25	.30	.35	.40

6539 Double Pointed Camel Hair Brushes:

Nos.	0	1	2	3
Each,	\$.45	.50	.55	.60



Drawing Pencils.

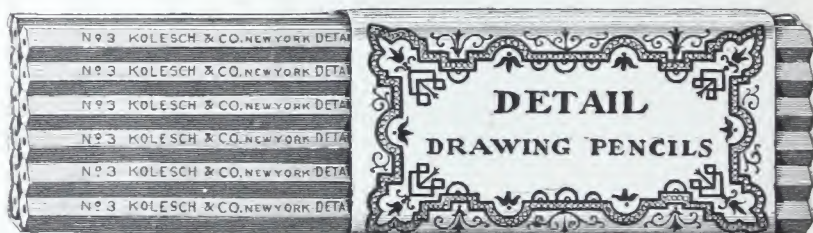


- 6550 Green Oak Drawing Pencil, made of compressed lead of the very best quality, free from grit and of uniform grading. Made in 11 degrees of hardness :

7H, 6H, 4H, 3H, 2H, H, F, HB, B, 2B, 5B,

Per box of 1 dozen..... \$.88

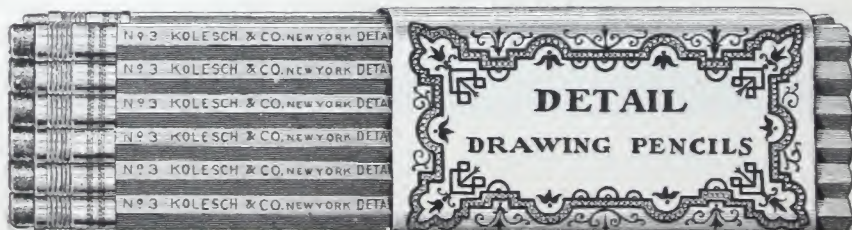
Per gross..... 9.36



- 6555 Detail Drawing Pencils, made especially for the use of Architects, Engineers and Designers, to supply the want of a good quality of pencil at a reasonable price. Made in 5 degrees of hardness, Nos. 1, 2, 3, 4, 5 :

Per dozen..... \$.38

Per gross..... 4.50



- 6560 Detail Drawing Pencil, with Rubber Tip. Quality same as No. 6555. Made in 2 degrees of hardness, Nos. 2 and 3 :

Per dozen..... \$.42

Per gross..... 5.00

Drawing Pencils — Continued.



6570

6570 Koh-i-noor Drawing Pencils, compressed lead. Made in 17 degrees of hardness :

9H, 8H, 7H, 6H, 5H, 4H, 3H, 2H, H, F, HB, B, 2B, 3B, 4B, 5B, 6B.

Degrees 9H to 3B—
per doz. \$1.00, per gross \$10.00

Degrees HB, with rubber tip—
per doz. \$1.25, per gross \$12.00

Degrees 4B—
per doz. \$1.15, per gross \$11.25

Degrees 5B and 6B—
per doz. \$1.40, per gross \$13.00

6572 Koh-i-noor Leads for Artists' Pencils. Made in 17 degrees of hardness :

9H, 8H, 7H, 6H, 5H, 4H, 3H, 2H, H, F, HB, B, 2B, 3B, 4B, 5B, 6B.

per box, containing $\frac{1}{2}$ doz. leads
Each.....\$.50



6572



6574 Koh-i-noor Artists' Pencils, with Movable Leads. Made in 17 degrees of hardness :

9H, 8H, 7H, 6H, 5H, 4H, 3H, 2H, H, F, HB, B, 2B, 3B, 4B, 5B, 6B.
Each.....\$.25



Drawing Pencils—Continued.



- 6575 **Field Book Pencil.** Particularly adapted for the use that its name implies, *i. e.*, in connection with the field book. The flat shape of this pencil allows it to be laid into the book without breaking the binding. Further, it is handy as a straight edge, for ruling lines. Made of the best quality lead, and of a degree of hardness suitable for such work:

Per box of one dozen..... \$1.10
Per gross..... 11.70

- 6577 **Koh-i-noor Copying Ink Pencils**, Violet only, for manifold writing and copying purposes, packed 1 dozen in box:

Per dozen..... \$1.00
Per gross..... 10.00

- 6578 **Mephisto Copying Ink Pencils**, made in the following colors: Violet, Blue, Black, Red and Green:

Per dozen \$.60

- 6580 **A. W. Faber's Siberian Drawing Pencils**, 6H, 5H, 4H, 3H, 2H, H, F, HB, B, 2B, 3B:

Per dozen..... \$1.25

- 6581 **A. W. Faber's Hexagon Drawing Pencils**, red finish, Nos. 1, 2, 3, 4, 5:

Per dozen..... .75

- 6582 **A. W. Faber's Black Round Gilt Pencils**, Nos. 1, 2, 3, 4:

Per dozen..... .50

- 6590 **Dixon's Artists' Pencils**, VVH, VH, H, MH, M, MB, SM, S, VS, VVS:

Per dozen..... 1.10

- 6591 **Dixon's Hexagon Pencils**, VH, H, MH, M, MB, SM, S:

Per dozen..... .70

- 6592 **Dixon's Round Pencils**, VH, H, MH, M, MB, SM, S:

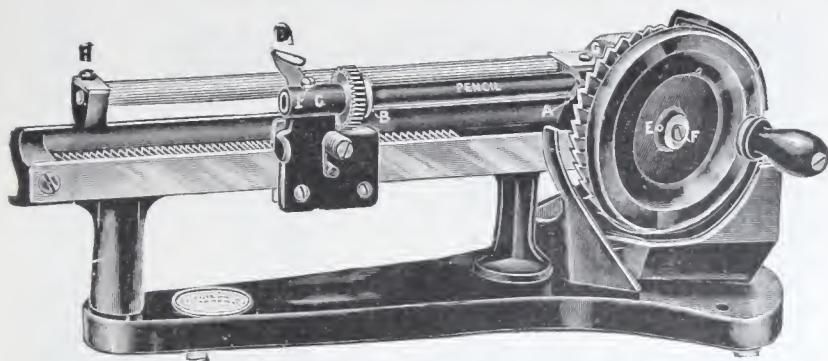
Per dozen..... .60

151 **BLAISDEL'S PENCIL CO.—PAT.** U.S. PAT. 11,75, 1895

- 6595 **Paper Pencils**, 1 dozen in a box, Red, Blue, Yellow, Green, Brown and Black:

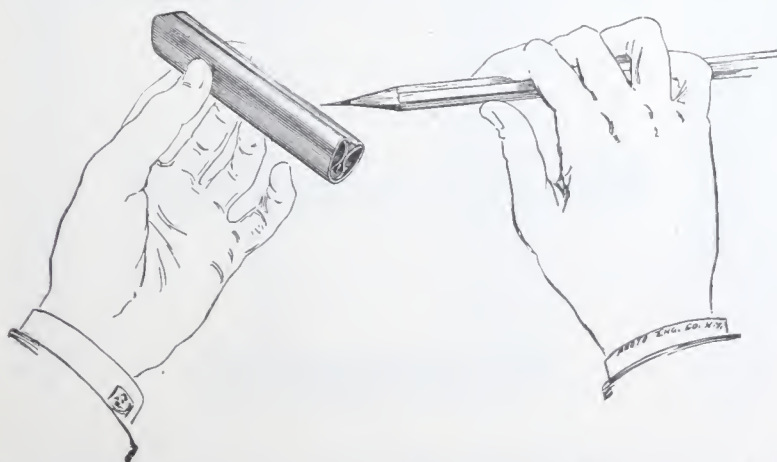
Per dozen..... \$.95

Pencil Sharpeners.



The Jupiter Pencil Sharpener is the most perfect Sharpener on the market, it will sharpen pencils without breaking the lead. The cutting wheel is reversible, and can be used on both sides. Any parts accidentally broken can be replaced at a small cost:

6600	Jupiter Pencil Sharpener, with directions for use.....	each, \$8.50
6605	New Cutting wheel.....	" 1.75
	Old wheels sharpened.....	" .75



6610	Duplex Pencil Sharpener (nickel plated case).....	each, \$.15 per doz., \$1.50
6612	Reserve sheets of emery cloth.....	per package, .05

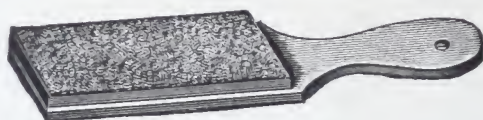
The "Duplex" Pencil Pointer is a new and improved device for sharpening a lead pencil in a few moments' time to the very finest point, either round or knife edged.

The Emery Cloth, which forms the abrading surfaces, will last for months; but if worn may be replaced by pushing out the inside holder, in which a new sheet can be easily inserted.

To give the pencil a flat edge, press the point lightly in the groove of the sharpener and draw lengthwise from end to end, or if a round point is required, roll the pencil between the thumb and fingers as shown in cut, taking care not to grind the point.



Pencil Pointers and Point Protectors.



6616

- | | | | | |
|------|---|--------|-----------|---------|
| 6615 | Pencil Pointers (sand paper pads), plain, $1\frac{1}{2} \times 4$ in..each, | \$.10 | per doz., | \$ 1.00 |
| 6616 | Pencil Pointers (sand paper pads), on wood handles. | " .15 | " | 1.50 |
| 6617 | Pencil Pointers (emery paper pads), plain..... | " .18 | " | 1.80 |
| 6618 | Pencil Pointers (emery paper pads), on wood handles | " .20 | " | 2.00 |



- 6620 Steel Pencil File and Tack Lifter, $7\frac{1}{4}$ in.....each, \$.25



- 6625 Pencil Holder, for using up short ends of pencils...each, \$.12 per doz., \$ 1.25

Pencil Point Protectors.



- 6630 Pencil Point Protector, with inserted Rubber.....per doz., \$.50
Extra Rubbers for same....." .15



- 6632 Cartridge Point Protector, for lead pencils.....per doz., \$.25



- 6634 Eagle Pencil Tips, with ribbon ends, large.....per doz., \$.50
6635 Eagle Pencil Tips, with rubber ends, small....." .15
6636 Extra Rubbers for same....." .15

Colored Crayons.



6640



6642



6644



6646

- 6640 Dixon's Marking Crayons, round, 7 inches long, $\frac{5}{16}$ inches diameter. Are made of solid crayon, wax finish, paper covered. For Surveyors' and Architects' use: Red, Blue, Yellow, Green, Brown, Terra Cotta, Black, Violet, Pink, Sepia, Orange. Per box of 1 dozen.....\$.75 per gross, \$7.50
- 6642 Crayon Holder, $4\frac{1}{2}$ in. long, for crayons No. 6640, each, \$.05 per dozen, \$.50
- 6644 Dixon's Lumber Crayons, $4\frac{1}{2}$ in. long, $\frac{1}{2}$ in. dia., paper covered, for Surveyors' use: Red, Blue, Yellow, Green, Brown, Terra Cotta, White, doz., \$1.00 gross, \$9.00
- 6646 Metal Workers' Crayons, flat, $4\frac{1}{2}$ inches long, per dozen, \$.50 per gross, \$3.50
- 6648 Tapered Marking Crayons, round, $4\frac{1}{2}$ inches long, paper covered, wax finish: Red, Blue.....per doz., \$.50
- 6649 Red Keel, in lumps.....per pound, \$.15



Colored Crayons.

6655 Faber's Colored Wax Crayons, in wood, best quality :

Reds.

16	Flesh Tint, No. 1	38	Vermilion	70	Light Pink
18	Flesh Tint, No. 2	42	Indian Red, No. 1	72	Dark Pink
20	Red Lead	46	Scarlet	75	Crimson
30	Indian Red, No. 2				

Blues.

12	Prussian Blue	50	Antwerp Blue, deep	65	Indigo
13	Ultramarine	58	Antwerp Blue, light	88	Light Blue

Yellows.

3	Chrome Yellow, pale	37	Yellow Ochre	62	Chrome Yellow, deep
4	Chrome Yellow, med.	59	Primrose Yellow	64	Italian Pink

Greens.

29	Prussian Green, No. 1	49	Prussian Green, No. 2	57	Chrome Green, No. 2
39	Olive Green, No. 1	53	Yellow Green	63	Chrome Green, No. 1
40	Olive Green, No. 3	56	Olive Green, No. 4	69	Chrome Green, No. 3
47	Olive Green, No. 2				

Browns.

6	Roman Ochre	35	Purple Brown	55	Raw Umber, No. 4
28	Indian Brown, No. 2	36	Brown Ochre	60	Red Brown
32	Burnt Umber	43	India Brown, No. 1	61	Raw Umber, No. 1
33	Raw Umber, No. 2	52	Raw Umber, No. 3	87	Van Dyke Brown
34	Burnt Sienna				

Various.

1	White	41	Black	54	Purple
21	Grey	51	Violet		

One kind or assorted.....per doz., \$1.00 each, .10

6657 Cabinets of Faber's Wax Crayons in assorted colors :

Box of.....	6	12	18	24	36	48 colors
Each.....	\$.80	1.50	2.00	2.50	3.50	4.50

Best Quality Colored Pencils.

6660	Faber's Hexagon, red and blue, in wood.....	per doz.,	\$1.25
6661	Faber's Round, red, in wood	"	1.00
6662	Faber's Round, blue, in wood	"	1.00
6663	Faber's Round, green.....	"	1.00

Second Quality Colored Pencils.

6665	Colored Crayons, round, in wood, red, blue, yellow, green, brown, per doz.,	.60
------	---	-----

Crayons.

6670	Conté Crayons, black, square, Nos. 1, 2, 3.....	per doz.,	.15
6671	Conté Crayons, black, round, Nos. 1, 2, 3.....	"	.30
6675	Conté Crayon Pencils, black, in wood, No. 1, hard.....	"	.60
6676	Conté Crayon Pencils, black, in wood, No. 2, medium.....	"	.60

Charcoal.

6680	Conté Charcoal, best quality, 50 sticks.....	per box, \$	.50
6681	Ordinary Charcoal, 50 sticks	"	.15

Fixatif.

6685	Fixatif, for crayon or charcoal:			
		Pint	$\frac{1}{2}$ Pint	2 oz. bot.
	Each.....	\$1.20	.75	.25

Atomizers.

6690	Atomizers, of tin, folding.....	each, \$	.15
6691	Atomizers, of glass.....	"	.25

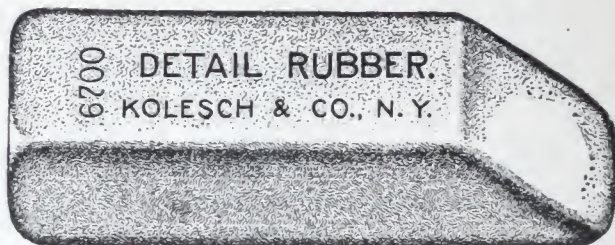
Crayon Holders.

6692	Crayon Holders, brass, 5 in.....	each, \$	.05	per doz., \$	.50
6693	Crayon Holders, brass, 6 in	"	.06	"	.60

Stumps.

6694	Leather Stumps, for crayon shading, Nos. 1-8, assorted.....	per doz.,	\$1.00
6695	Paper Stumps, for crayon shading, Nos. 1-8, assorted.....	"	.25
6696	Paper Stumps, small (Tortillons).....	"	.10
6697	Rubber Stumps (Nigrivorine), $2\frac{1}{2}$ in. long.....	"	.50
6698	Rubber Stumps (Nigrivorine), 3 in. long.....	"	.70
6699	Rubber Stumps (Nigrivorine), 4 in. long.....	"	.90

Rubbers and Erasers.



- 6700 Detail Rubber, a pure green rubber of great elasticity and best erasing qualities, smoothly finished and beveled at one end. Will not discolor the paper.
- | | | |
|-----------------------|--------------|-------------|
| Small, 24 to lb | cake, \$.10 | lb., \$1.90 |
| Large, 12 to lb..... | " .20 | " 1.90 |

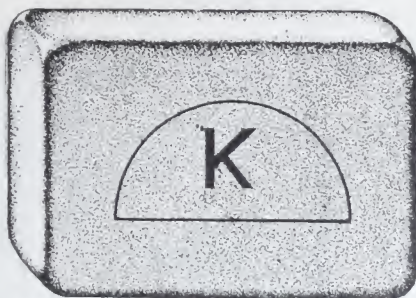


- 6710 White Sponge Rubber, a cleaner for drawings and tracings; will remove pencil lines without affecting the ink lines; will not affect the surface of the paper or cloth. Does not smut.
- | | | |
|---|--------------|------------------|
| $1\frac{1}{2} \times 1\frac{1}{2} \times 1$ inch..... | cake, \$.08 | per doz., \$.80 |
|---|--------------|------------------|

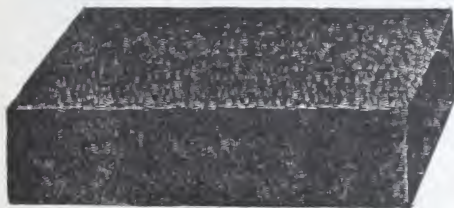


- 6725 Fulton Circular Eraser, for ink and pencil.
- | | | |
|-----------------------|-----------------|--------------|
| One dozen in box..... | per box, \$.60 | each, \$.06 |
|-----------------------|-----------------|--------------|

Rubbers and Dusters.



- 6715 Pliable Rubber, grey, a very soft rubber for erasing pencil marks, and for cleaning drawings.
 Small, 20 to lb.....cake, \$.12 lb., \$2.25
 Medium, 12 to lb....." .20 " 2.25
 Large, 8 to lb....." .30 " 2.25
- 6717 Pliable Rubber, pink.
 Small, 20 to lb....." .12 " 2.25
 Medium, 12 to lb....." .20 " 2.25
 Large, 8 to lb....." .30 " 2.25



6720

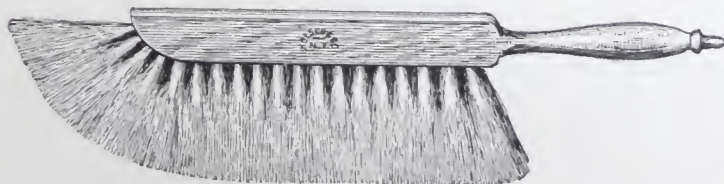
- 6720 Sponge Rubber, for cleaning drawings:

	1X1X1 in.	2X1 1/2 X1 in.	4X2X1 in.
Each.....	\$.10	.25	.60
6730 Faber's Kneaded Rubber.....	per dozen, \$1.00	each, \$.10	
6735 Hardtmuth's Pliable Rubber, Grey or Pink:			
	20 to lb.	12 to lb.	8 to lb.
Per lb.....	\$2.75	2.75	2.75
Each.....	.15	.25	.35



6735

Dusters.



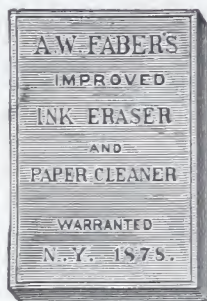
- 6740 For removing dust, rubber crumbs, etc., from drawings
 per dozen, \$7.50 each, \$.75



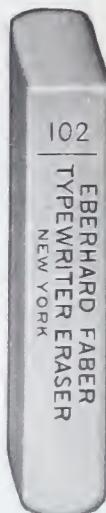
Erasing Rubbers.



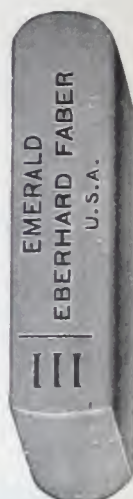
6745



6747



6750



6751

Faber's Artists' Rubbers.

6745	20 to lb.	12 to lb.	8 to lb.	4 to lb.
Each.....	\$.12	.20	.25	.50

Faber's Ink Erasers.

6747	Small	Medium	Large
Per dozen.....	\$.50	1.00	2.00
Each.....	.05	.10	.20

Typewriter Erasers.

6750	Small	Large
Per dozen.....	\$.50	1.00
Each.....	.05	.10

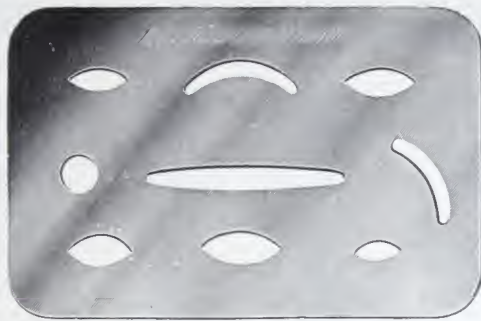
Emerald Rubbers.

6751	Small	Large
Per dozen.....	\$.50	1.00
Each.....	.05	.10

Ruby Rubbers.

6752	Small	Large
Per dozen.....	\$.50	1.00
Each.....	.05	.10

Erasing Shields.



- | | | | | |
|------|--|--------|------------|---------|
| 6755 | Erasing Shield, nickel plated.....each, | \$.20 | per dozen, | \$ 2.00 |
| 6756 | Erasing Shield, transparent celluloid..... | “ .20 | “ | 2.00 |



- | | | | |
|------|---|-------|--------|
| 6760 | Steel Erasers, wooden handle (domestic) | each, | \$.35 |
| 6761 | Steel Erasers, wooden handle (Rodgers)..... | “ | .60 |



- | | | |
|------|---|--------|
| 6765 | Steel Erasers, wooden handle (domestic).....each, | \$.45 |
| 6766 | Steel Erasers, wooden handle (Rodgers)..... | “ .70 |

Lettering Pens.



- | | | per gross | dozen |
|------|--|-----------|--------|
| 6775 | Gillott's Crow Quill Pens, No. 659, 1 doz. and holder on a card.. | \$6.00 | \$.60 |
| 6776 | Gillott's Crow Quill Pens, No. 850, 1 doz. and holder on a card (long shoulder)..... | 7.50 | .75 |
| 6777 | Gillott's Lithographic Pens, No. 290, 1 doz. and holder on a card, | 6.00 | .60 |
| 6778 | Gillott's Mapping Pens, No. 291, 1 doz. and holder on a card.... | 6.00 | .60 |
| 6779 | Gillott's Mapping Pens, No. 170..... | 1.00 | .10 |
| 6780 | Gillott's Lettering Pens, No. 303..... | 1.50 | .15 |
| 6781 | Gillott's Lettering Pens, No. 404..... | .75 | .10 |
| 6785 | French Crow Quill Pens, with holder..... | | .40 |



Pen Holder for Crow Quill Pens.



6788

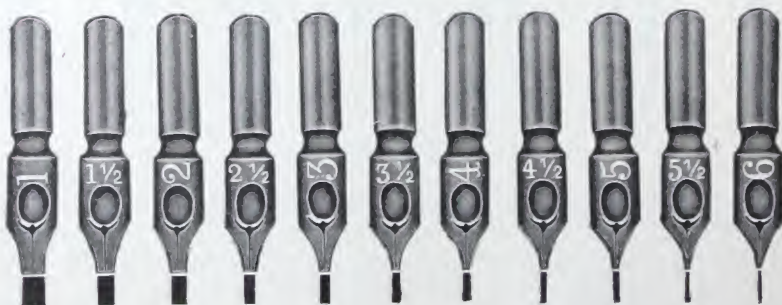
6788 Improved Pen Holder, for Crow Quills Nos. 650 and 850.....each, \$.06

Writing Pens.



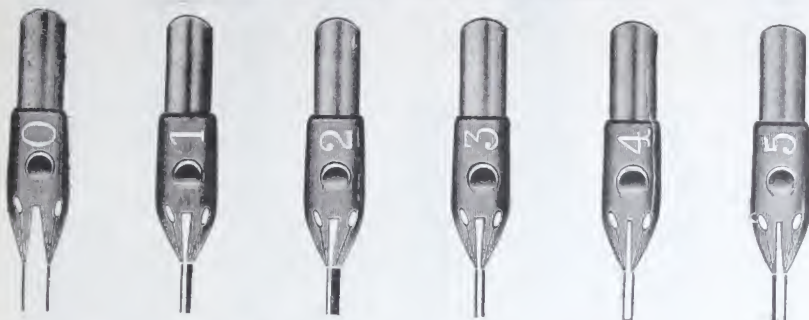
6790	Esterbrook's Falcon Pens, 048.....	per dozen, \$.10	per gross, \$.85
6791	Esterbrook's Bank Pens, 14.....	" .10	" .85
6792	Esterbrook's Amalgam, 92.....	" .10	" .85
6793	Esterbrook's Dbl. Elastic, 135.....	" .10	" .85
6794	Esterbrook's Relief, 314.....	" .12	" 1.00
6795	Esterbrook's Chancellor, 239.....	" .12	" 1.00
6797	Ball Pointed Pens, Nos. 506F, 506EF, 516F, 516EF.....	per gross, 1.20	

Round Writing Pens.



6800 Single Pointed Pens, box of 3 dozen of any one number.....each, \$.25
 Single Pointed Pens, dozen of one kind or assorted..... .10

Round Writing Pens—Continued.



- 6805 Double Pointed Pens, box of 3 dozen of any one number.....each, \$.65
 Double Pointed Pens, per dozen of one kind or assorted..... .35
 6809 Assortment of 25 Single and Double Pens, in box.....per box, .35



- 6810 Inkholders for Single or Double Pointed Pens.....each, \$.05
 6815 Penholders for Round Writing Pens..... " .10
 6816 Penholders for Round Writing Pens, double end..... " .10

Books on Round Writing.

- 6820 Round Writing Copy Book, with complete text.....each, .65
 6825 Round Writing Copy Book, no text..... " .35

Lettering Alphabets.

- 6830 Reinhardt's Lettering for Draftsmen (a practical system of freehand lettering for working drawing), 44 illustrations..... \$1.00
 6832 Fish's Lettering of working drawing, 13 plates with descriptive text.... 1.00
 6834 Cromwell, a system of easy lettering..... .50
 6836 The Ornamental Penman's, Engravers', Sign Writers' and Stone Cutters' Pocket Book of Alphabets..... .20
 6838 Brown's Letters and Lettering, for architects and designers, 234 pages, Each..... 2.00
 6840 Jacoby's Text Book, on plain lettering..... 3.00

Writing Inks and Pastes.

- 6870 Stafford's Blue Black Office Ink (writing or copying):
Each.....quart, \$.85 pint, .55 ½ pint, .35
- 6875 Carter's Combined Writing and Copying Ink:
Each.....quart, \$.85 pint, .55 ½ pint, .35
- 6880 Stafford's Carmine Writing Ink:
Each.....quart, \$2.50 pint, 1.50 ½ pint, .85 2 oz., .25



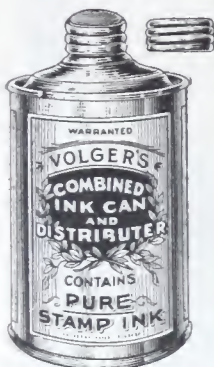
- 6885 Higgins' Taurine Mucilage:
Each.....quart, \$.80 pint, .50 ½ pint, .30 2 oz., .10
- 6890 Higgins' Photo Mounter:
Each....gallon, \$3.50 ½ gallon, 2.00 14 oz., .50 6 oz., .25 3 oz., .15
- 6895 Higgins' Drawing Board Mucilage:
Each....gallon, \$3.50 ½ gallon, 2.00 14 oz., .50 6 oz., .25 3 oz., .15



- 6900 Higgins' Vegetable Glue, a dense glue like paste, adapted for heavy work, such as stretching paper to drawing boards:
Each.....10 lb. 5 lb. 2 lb. 1 lb. ½ lb. can
\$1.75 1.00 .50 .25 .15
- 6905 Day's White Paste, a pure white scented paste of good quality:
Each.....large, \$.25 small, .15



"Opaque" Quick-Drying Waterproof Ink and Pads.



For stamping titles, etc., on tracings. Tracings stamped with this ink will produce clear and distinct blue prints. The special pads are sold in pairs and are made of fine quality hat felt. Soiling of hands is prevented by the moulding strips enclosing the pads proper. A label giving simple directions is attached to under side of pad:

6910 "Opaque" Quick Drying Ink:

	Pint	$\frac{1}{2}$ Pint	2 oz.	1 oz. bottles
Each.....	\$2.50	1.50	.50	.25
6912 Pads, for using ink No. 6910:				
2 x 3 in.	3 x 4 in.	3 x 6 in.	4 x 7 in.	4 x 9 in.
Per pair..\$.20	.30	.40	.60	.70

Rubber Bands (Best Quality).



$1\frac{1}{8}$ in. long.



$1\frac{1}{4}$ in. long.

$\frac{1}{8}$ in. wide.



$1\frac{1}{2}$ in. long.



$1\frac{3}{4}$ in. long.

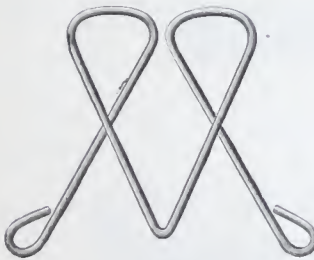
6915	$\frac{1}{8}$ in. wide:	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2 in. long.
	Per gross.....	\$.17	.19	.21	.25	.28
6916	$\frac{1}{4}$ in. wide:	$1\frac{3}{8}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3 in. long.
	Per gross.....	\$.60	.65	.70	.80	.90
6917	$\frac{1}{2}$ in. wide:		2	$2\frac{1}{2}$	3	$3\frac{1}{2}$ in. long.
	Per gross.....		\$ 1.00	1.25	1.50	1.75
6919	Assorted sizes of $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{1}{2}$ in. wide bands.....				$\frac{1}{4}$ lb. box,	\$.75 net.
	Any of the above sizes in $\frac{1}{4}$ lb. boxes.....				per box,	.75 "

Prices of Rubber Bands subject to change without notice.

Paper Fasteners.



6925	Round Heads, No. 1, $\frac{1}{4}$ in. long...	per box of 100, \$	.13	per box of 1000, \$	1.25
6926	Round Heads, No. 2, $\frac{1}{2}$ in. long..	" "	.15	" "	1.50
6927	Round Heads, No. 3, $\frac{3}{4}$ in. long..	" "	.20	" "	2.00
6928	Round Heads, No. 4, 1 in. long..	" "	.25	" "	2.50
6930	Flat Heads, No. 1, $\frac{1}{4}$ in. long....	" "	.10	" "	1.00
6931	Flat Heads, No. 2, $\frac{1}{2}$ in. long....	" "	.13	" "	1.25
6932	Flat Heads, No. 3, $\frac{3}{4}$ in. long....	" "	.15	" "	1.50
6933	Flat Heads, No. 4, 1 in. long....	" "	.18	" "	1.75



6940

GIANT, FULL SIZE



6942

FULL SIZE.



6944



6946



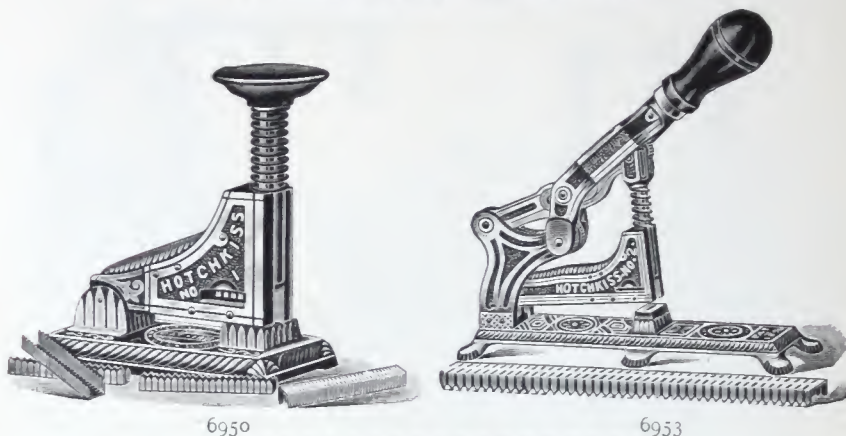
6948

6940	Niagara Clips, Giant.....	per box of 100, \$	.25	per box of 1000, \$	2.25
6942	Niagara Clips, regular size.....	" "	.15	" "	1.35
6944	L. B. Expansive Clips.....	" "	.15	" "	1.35
6946	Gem Paper Clips.....	" "	.15	" "	1.35
6948	Ideal Paper Clips.....	" "	.15	" "	1.35



6949	Pyramid of Pins.....	each, \$.12	per box of 1 dozen, \$	1.25
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Automatic Stapling Machines.



6950

6953



6951-6954-6957

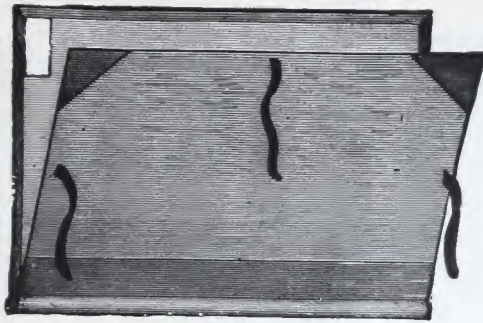
- | | | |
|------|---|--------------|
| 6950 | Automatic Stapler No. 1, always loaded ready for use, with 500 Staples. | each, \$1.50 |
| 6951 | Extra Staples for No. 1, per 1,000..... | .60 |
| 6953 | Automatic Stapler No. 2, for fastening 50 sheets of ordinary paper, length of bar 10 in..... | " 3.50 |
| 6954 | Extra Staples for No. 2, per 1,000..... | .75 |
| 6956 | Automatic Stapler No. 3, same style as No. 2, for fastening 100 sheets of ordinary paper, length of bar, 11 in..... | " 4.00 |
| 6957 | Extra Staples for No. 3, per 1,000..... | .90 |

Mending Tape.



- 6960 Gummed Mending Tape, $\frac{7}{8}$ inch wide, for binding and mending drawings, blue prints, music, etc. White, red, grey, light green, dark green, ecru, brown, maroon, blue, black:
- | | |
|---|--------------|
| Rolls 10 yards long..... | each, \$.12 |
| Per box of 1 dozen rolls, of one color or assorted..... | 1.25 |

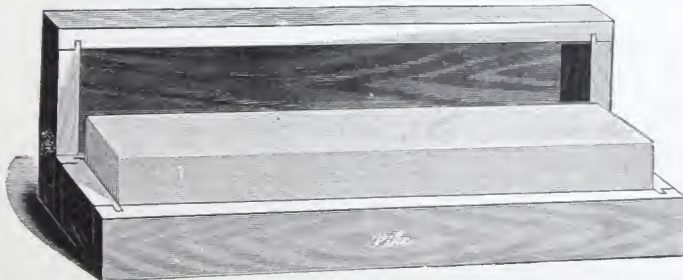
Portfolios.



- 6965 Portfolios, best quality, with leather backs and corners, cloth sides and flaps:
- | | | | | | |
|-----------|---------|---------|---------|---------|----------------|
| | 12 x 16 | 17 x 22 | 19 x 25 | 23 x 31 | 27 x 40 inches |
| Each..... | \$1.00 | 1.50 | 2.00 | 2.50 | 4.50 |
- 6967 Portfolios, with cloth back and corners, paper sides:
- | | | | | | |
|-----------|---------|---------|---------|---------|----------------|
| | 12 x 16 | 17 x 22 | 19 x 25 | 23 x 31 | 27 x 40 inches |
| Each..... | \$.60 | .75 | 1.00 | 1.25 | 3.50 |

Arkansas Oil Stones.

Best Quality, Hard.



For sharpening Drawing Instruments, Knives, etc.

- 6970 Arkansas Oil Stones, in wooden cases, with cover:
- | | | | | | | |
|------------|--------|-------|-------|-------|-------|------------|
| | 3 in. | 4 in. | 5 in. | 6 in. | 7 in. | 8 in. long |
| Each... .. | \$.75 | 1.20 | 2.00 | 2.50 | 3.00 | 3.35 |
- 6972 Arkansas Oil Stones, 4 x 1 in., on mahogany handles.....each, \$.60
- 6974 Arkansas Oil Stones, wedge shape, for sharpening Ruling Pens.... " .50
- 6976 Bone Oil, for Oil Stones or Instruments.....per bottle, .25

Blotting Paper.

- 6980 White or Blue, 19 x 24 inches.....per quire, \$1.50
- 6982 White or Blue, small size, package of 1 dozen......06

- | | | | | | |
|------|--|----------|-----|-----------|--------|
| 7010 | White Paper, 8 x 12½ in., ruled , with border line..... | each, \$ | .15 | per doz., | \$1.50 |
| 7011 | White Paper, 8 x 10 in., ruled , with border line.... | " | .12 | " | 1.30 |
| 7012 | White Paper, 5 x 8 in., ruled , with border line.... | " | .08 | " | .80 |
| 7013 | White Paper, 8 x 10 in., plain | " | .12 | " | 1.30 |
| 7014 | White Paper, 5 x 8 in., plain | " | .08 | " | .80 |
| 7015 | Buff Paper, 8 x 12½ in., ruled , with border line.... | " | .12 | " | 1.25 |
| 7016 | Buff Paper, 8 x 10 in., ruled , with border line.... | " | .10 | " | 1.15 |
| 7017 | Buff Paper, 5 x 8 in., ruled , with border line..... | " | .08 | " | .80 |
| 7018 | Buff Paper, 8 x 10 in., plain | " | .08 | " | .80 |
| 7019 | Buff Paper, 5 x 8 in., plain | " | .05 | " | .50 |

Certificate Books.

Amount \$	Certificate No.	190
Owner	Address	
having furnished labor and material on _____ under terms of contract dated _____ and amounting to \$ _____ entitled to the _____ payment of _____ DOLLARS.		
SUMMARY Amount of contract \$ _____ Extra work . . . \$ _____ Previous payment . \$ _____ Present payment . \$ _____ <div style="text-align: right;">BALANCE \$ _____</div>		
Received the amount of above certificate, _____ 190		

PUBLISHED BY KOLESCH & CO., 138 FULTON ST., NEW YORK.

Architects' Certificate Books, new form which does away with writing a stub for each certificate. By employing the manifold system and using the best quality of **pen-carbon**, an exact fac-simile of the certificate is produced at one writing:

- 7030 Book of 100 certificates and 100 duplicates, each, \$1.00 3 Books, printed with name and address \$6.75
 6 Books, printed with name and address 9.50 1 Book, printed with name and address 2.75



Blank Forms.

- 7035 Agreements, between Owner and Architect, giving owner's consent in writing as to terms, prices, etc.:

Each.....\$.03 per doz., .25 per 50, .95 per 100, 1.50

- 7037 Contracts, between owner and architect.....per doz., \$.25 per 100, \$1.75

- 7039 Building Contracts, short form..... " .25 " 1.75

- 7041 Building Contracts, with bond..... " .25 " 1.75

- 7043 Contractors' Statements, giving list, etc., of sub-contractors..... " .25 " 1.75

- 7045 Mechanic's Lien Notice..... " .25 " 1.75

- 7047 Waiver of Lien..... " .25 " 1.75

- 7049 Uniform Building Contracts, adopted by the American Institute of Architects and the National Association of Builders:

Each, \$.05 5 copies, .15 10 copies, .25 25 copies, .50 50 copies, .75 100 copies, \$1.35.

In ordering please state whether singular or plural form is desired.

Specifications.

- 7050 "Standard" Specifications, new and revised form, for frame and brick buildings costing from \$500 to 15,000. Contains the following headings: General Conditions, Mason, Cut Stone, Plastering, Carpenter, Painter, Glazier, Plumber, Gas Fixtures, Sewers, Galvanized Iron, Structural Iron, Heating (steam or hot water), Heating (hot air), Electric Wiring, Speaking Tubes and Bells,

each, \$.25 dozen, \$2.50

- 7052 Specification Reminder, a handy booklet for writing specifications..each, .50

- 7053 Printed Covers, for specifications.....per doz., \$.20 per gross, 2.00

- 7054 Manuscript Covers, for typewritten sheets, Blue, Terra Cotta, Chocolate

per 100, .50

- 7055 Black Rubber Cloth, for wrapping drawings, tracings, etc., 48 in. wide, Per roll of 12 yds.....\$3.75 per yd., .35

Pasteboard Mailing Tubes.

- 7056 Pasteboard Mailing Tubes:

	12	18	24	30	36	42 in. long
1½ in. diameter.....\$	.25	.40	.50	.60	.65	.75 per doz.
2 in. diameter.....	.30	.50	.60	.70	.75	.85 "

- 7057 Telescoping Pasteboard Tubes, with wooden ends:

3 in. diameter, 38 in. long.....each,	\$.50
5 in. diameter, 38 in. long.....	" .60

For Metal Tubes, see page 16.

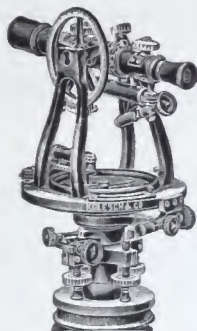
Carbon Papers and Typewriter Ribbons.

- 7058 Typewriter Carbon Paper, 8 x 13 in., Purple, Blue or Black, Per 100 sheets.....\$3.75 per doz. \$.60

- 7059 Typewriter Ribbons, of any color or for any machine.....each, 1.25

KOLESCH & CO., NEW YORK.

(Successors to F. Eckel, formerly Blunt & Co.)



The Surveying instruments enumerated on the following pages are all of our own make and designed for the highest grade of Engineering work. Being the successors to the late Mr. F. ECKEL, who succeeded the firm of BLUNT & CO., we have one of the best equipped shops; and with the aid of an experience of two of the best known makers for over half a century, we are in a position to build instruments of the highest degree of accuracy combined with the most powerful telescopes. In the construction of our instruments we are using patterns which were originally designed by the above makers, and which have from time to time been improved and reshaped to adapt them to the present modern system. We aim to, and have successfully attained, to combine the least weight with the utmost strength, so as to secure steadiness of adjustment under varying temperatures, also stiffness, to avoid tremor when working in a strong wind. Our instruments are graduated on a **dividing machine** originally built by Mr. Blunt in the years of 1851-1858. This engine is one of the first built in this country, and its accuracy has been attested to by the late J. E. Hilgard, of the United States Coast Survey. Work graduated on our engine has stood the test of the most critical engineers during the many years of actual use, and with improvements made in later years, it ranks to-day among the best. As it may be of interest to the engineering profession, we give an illustration of our **Automatic Dividing Machine**, on the following page.

A correct description of our instruments will be found on the following pages.

We invite correspondence with such parties who may wish to buy new or second-hand instruments, have their old instruments repaired, re-graduated, re-adjusted or exchanged, or who wish to rent instruments.

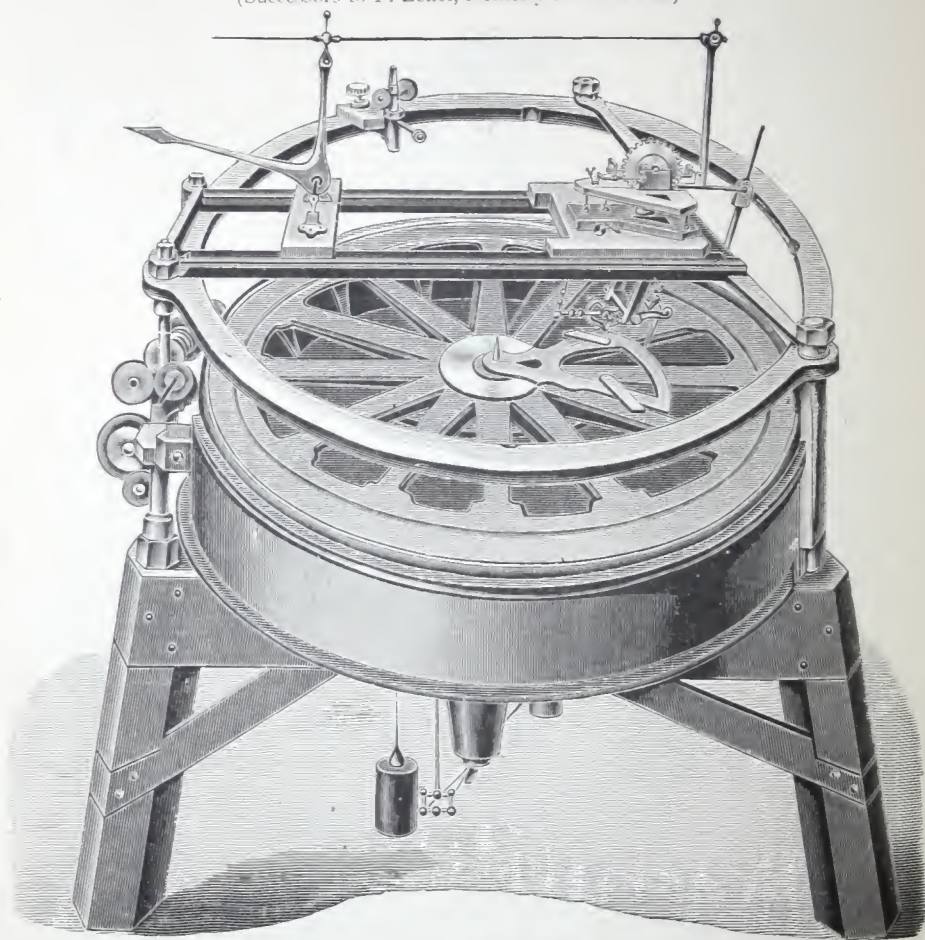
Repairs.—As it is impossible to give an estimate for repairs without having the instrument taken apart and having every part carefully examined, we advise our customers to send their instruments to us for an examination. We will in every instance examine the instrument carefully and give an estimate of the necessary repairs before going ahead. If estimate is not satisfactory, we will return the instrument without any charges for examination.

Instruments thus sent to us should be carefully packed and should have the name of the sender on the packing box. Tripods, unless in need of repairing, need not be sent with repairs.



KOLESCH & CO., New York.

(Successors to F. Eckel, formerly Blunt & Co.)



Automatic Dividing Machine.

General Description of Transits and Levels.

The upper and lower plates of our Transits are substantial ribbed castings, and although they weigh about 20 per cent. less than the plates in the old style instruments, they give the instrument a high grade of stiffness and stability. The Standards of our Transits have their legs well spread and set close to the compass box, for the purpose of obtaining the shortest possible axis to telescope and to increase their strength.



Centres. The long compound centres have heavy flanges, and are fitted very accurately into each other; they give the whole instrument an uncommon rigidity and stability. They are made of three different kinds of metal to reduce friction.

Leveling Screws. All our Transits (unless ordered with **three leveling screws**), have a **four-arm piece**, and are provided with a **shifting plate**, sometimes called "shifting center."

The **leveling centres** in our Transits and Levels, which receive the leveling screws, are slotted and can be adjusted by means of the set screws, thus making them uniform under all conditions of wear and temperature. This arrangement dispenses with the dust caps.

The **Spirit Levels** are extremely sensitive and carefully selected for each instrument.

Clamp and Tangent Screws. The clamps for limbs and centres are all provided with improved micrometer tangent screws, permitting a very fine adjustment of the plates. The screws are made of hard metal, and the clamps are provided with counter springs to take up lost motion.

The **Compass** in our instruments is graduated to half degrees and marked in quadrants from 0° - 90° , and is provided with a very sensitive bar needle set in a jewel centre. The variation plate for correcting the local deviation of the needle is operated by means of a pinion. The shaft of this pinion has a capstan head and is regulated with the adjusting pin.

The **Telescope.** The best obtainable lenses are used in our telescopes, which are constructed as to obtain a large flat field with abundant light. The eye-piece, which is adjustable, is provided with a shutter, the objective with cap and sunshade. The object slide is protected by a dust guard, and like the eye-piece, has rack and pinion for focusing. The telescope slides fit snugly and move positively straight, and the line of collimation is correct for all distances. The telescope is well balanced, is reversible from both ends, and has clamp and tangent screw for vertical adjustment. The screws operating the rack and pinion movement of eye-piece and objective are placed on top of the telescope, so as to be accessible for either hand. The magnifying power of our telescopes is about 24-30 diameters. This we have found to be the most serviceable for field and definition.

Graduation. For the purpose of obtaining very sharp and distinct graduations, we divide the horizontal limb as well as the vertical circles or arc on **solid silver**.

The utmost care is given to the correct centering and graduating of the horizontal and vertical circles, and all graduations are warranted to be perfectly accurate.

The horizontal limb is numbered as follows: The outer row from 0° - 360° ; the inner row from 0° - 180° and back, as cut will show, and has two opposite double-fold verniers marked **A** and **B**, which are placed at about 30 degrees with the telescope, and are protected by glass covers. Ground glass shades will be attached to the verniers if ordered.

The vertical arc or circle is divided on **solid silver** and marked from 0° - 90° in quadrants, and usually graduated to 30 minutes reading by vernier to single minutes; but can be graduated to correspond with the divisions of the horizontal limb if desired.

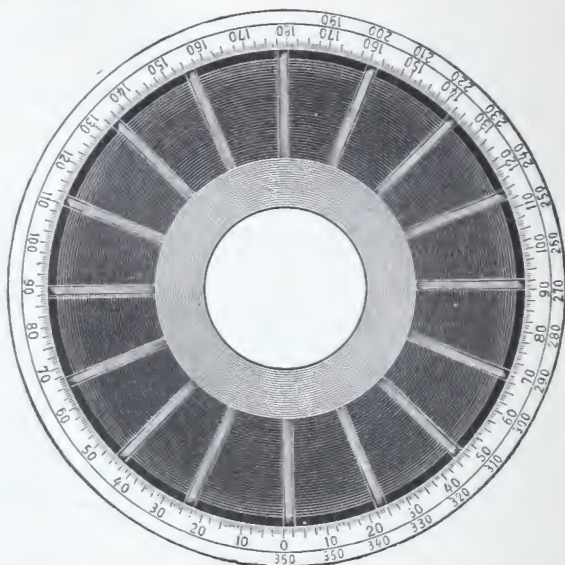
The verniers of **solid silver** are either made to read single minutes or 30 seconds (as cuts on next page will show), finer divisions reading to 20 or 10 seconds can be furnished at small cost.



The **Cross and Stadia Hairs** in our telescopes are of the best web, uniform in thickness, and are reliable under all atmospheric conditions. All **Stadia Hairs** are set to read on a leveling rod exactly one foot for a distance of 100 feet, but are adjustable for any other distance.

Gradienter Attachments (for distance measurements) will be furnished with our instruments whenever required. The Gradienter is a special tangent screw attached to the clamp of the telescope axis; it is divided into 50 parts, one complete revolution of the screw corresponding to one foot in fifty feet distance; fractions of one foot being easily read by the division of the screw.

The **finish of our Transits** is very durable. We bronze all instruments dark, unless otherwise ordered.



The above cut represents the lower plate with the divisions and mode of numbering. If desired, the limb can be numbered any other way.



Limb graduated 30 minutes, vernier reading single minutes.

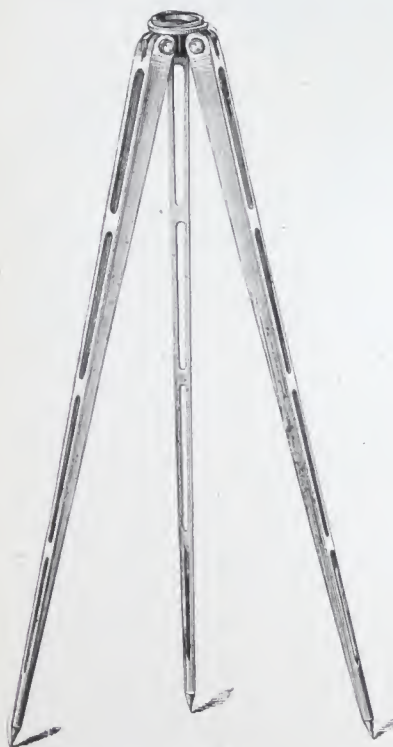


Limb graduated 20 minutes, vernier reading 30 seconds.

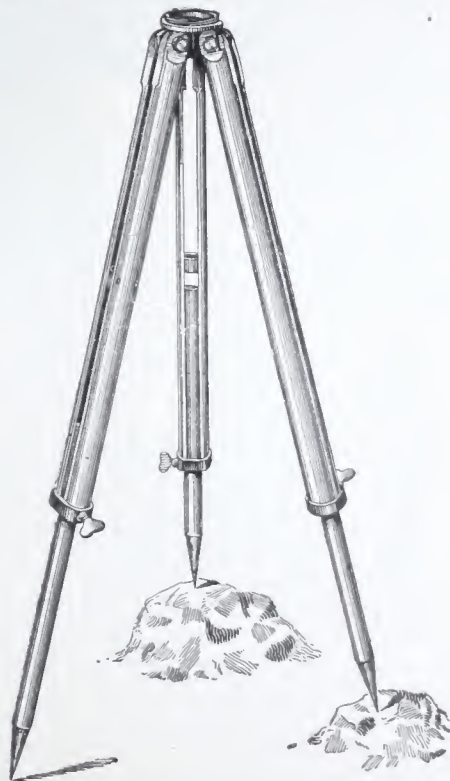
Tripods and Cases.

The head of the Tripod is cast in one piece, has a strong screw-thread for mounting the instrument, and is provided with a screw cap to protect the thread from injury while being transported. With each instrument we furnish a solid leg Tripod, but can furnish a split leg Tripod, as per cut below, at same price.

Strong, neatly-fitting, carrying cases with lock, key and leather strap are furnished with each instrument; also plumb bob, adjusting pins and magnifying glass. To protect the instrument from jarring, the bottom of the case is provided with rubber cushions.



Split Leg Tripod



Extension Tripod

Tripods for Transits and Levels Nos. 8000-8052.

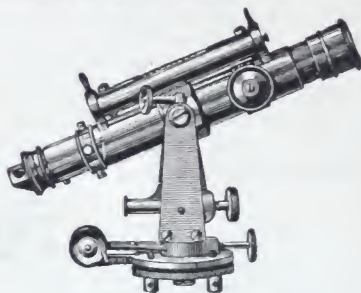
7060	Solid Leg or Split Leg Tripod, without instrument.....each,	\$10.00
7062	{ Extension Tripod, without instrument.....	15.00
	{ Extension Tripod, with instrument, instead of regular Tripod.....	5.00

Light Tripods for Transits and Levels, Nos. 8060-8082.

7064	Solid Leg or Split Leg Tripod, without instrument.....each,	\$6.00
7066	{ Extension Tripod, without instrument.....	12.00
	{ Extension Tripod, with instrument, in place of regular Tripod....	6.00

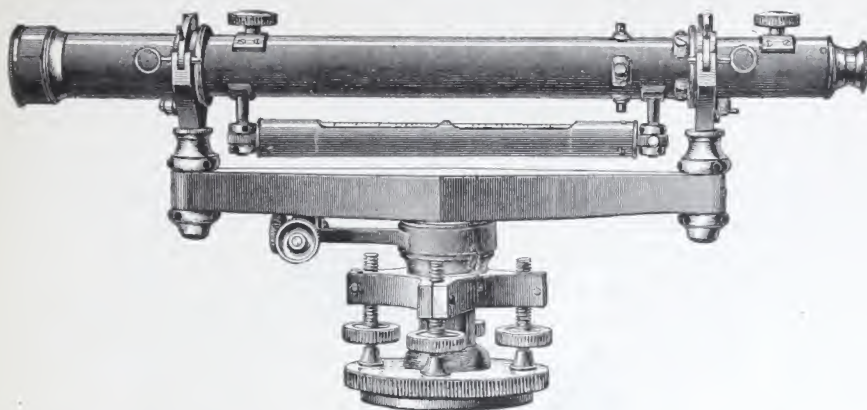


Attachments and Extras to Transits.



Solar Attachment, if ordered with new instrument.....	\$50.00
(This solar attachment, attached to any transit with bubble and vertical circle, serves to obtain the meridian, latitude and time, with great accuracy, and can be used also as a vertical sighting telescope.)	
Extra Telescope for vertical sighting, with prism to eye-piece, either on top or on the sides of regular telescope, if ordered with new instrument.....	\$40.00
Extra Telescope at right angle to regular telescope, with new instrument.....	55.00
Inverting or Astronomical Eye-piece.....	5.00
Eye-piece, with reflecting prism to attach to regular eye-piece.....	5.00
Disappearing Stadia Hairs, if ordered with instrument.....	4.00
Fixed Stadia Hairs.....	3.00
Plain Cross Hairs.....	2.00
Gradiometer Screw to telescope instead of tangent screw (see cut No. 8030).....	5.00
Telescope with theodolite axis, if ordered with instrument.....	10.00
Telescope with astronomical instead of terrestrial eye-piece.....	5.00
Horizontal Limb and Verniers, graduated to read 10 seconds.....	10.00
Horizontal Limb and Verniers, graduated to read 20 seconds.....	5.00
Guard to vertical circle, aluminum.....	5.00
Right angle sights attached to Standards, if ordered with instrument....	5.00
Ground Glass Shades attached to verniers.....	5.00
Attached Reading Glasses to limb or vertical circle..... each,	5.00
Sun Shades for transits or levels.....	" .75
Dust Cap for object glass.....	" .50
Center Key and Screw Driver.....	" .25
Steel Adjusting Pins..... per dozen, \$.60	" .05
Legs for Tripods No. 7060.....	" 2.00
Legs for Tripods No. 7062.....	" 3.50
Legs for Tripods No. 7064.....	" 1.25
Legs for Tripods No. 7066.....	" 3.50
Bone Oil, for Surveying Instruments..... per bottle,	.25
Graduated Level Vials, unmounted:	
For Telescopes on Transits or Levels..... each,	2.00
For Plates on Transits.....	" 1.00
Gossamer Bag, of rubber cloth.....	1.00
Gossamer Bag, of rubber silk.....	2.00
The above prices only apply to attachments when ordered with new instruments. If attachments are ordered for old instruments, charges for fitting will be added.	

Engineers' Improved Y Level.



8000 **Engineers' Y Level**, with powerful achromatic terrestrial telescope, 18 inches long, magnifying power about 28 diameters, which we have found to be the best for field and definition. The lenses are especially made and selected by the best European optical works. Aperture of object glass $1\frac{3}{8}$ inches. Dust cap and sun shade. Improved rack and pinion movement to eye-piece and objective. Very, fine sensitive bubble (7 inch vial), graduated on the glass, adjustable vertically and horizontally.

Centers and Telescope Rings are very stout, long and of hard bell metal.

Telescope will revolve in the Y's without opening the clips, and by means of an improved stop, the cross hairs can be placed instantly in a vertical and horizontal position.

The Bar is cast hollow and provided with ribs to combine utmost strength with light weight.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

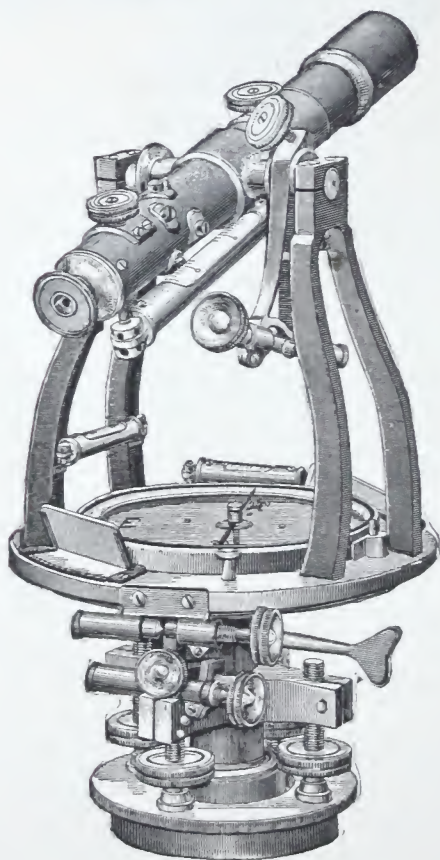
Screws: clamp and tangent screws are attached to the bar and revolve with it. All leveling and tangent screws are made of German silver. Tangent screws of improved construction, with counter spring.

Instrument complete, in finely polished mahogany box, with adjusting pins and solid or split leg tripod.....each, \$125.00

8001	Engineers' Y Level , same as No. 8000, but 15 inch telescope,	"	100.00
8002	Engineers' Y Level , same as No. 8000, but 20 inch telescope.....	"	135.00
8003	Engineers' Y Level , same as No. 8000, but 22 inch telescope.....	"	140.00



Engineers' Improved Transit
with
Bubble to Telescope.



8010 Engineers' Transit. (For description, see page 171.)

Engineers' Improved Transit with Bubble to Telescope.

8010 Engineers' Transit, Bent Standards, with powerful achromatic terrestrial telescope about 11 inches long. Magnifying power about 24 diameters, which we have found to be the best for field and definition. The lenses are especially made and selected by the best European optical works. Aperture of object glass $1\frac{3}{16}$ inches. Dust cap and sun shade. Improved rack and pinion movement to eye-piece and objective. Fine bubble ($4\frac{1}{2}$ inch vial) to telescope, graduated on the glass. Telescope, reversible from both ends.

Cross and Stadia Hairs.

Shifting Center. The centers are extra long and made of three different kinds of metal to reduce friction.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

Screws. All clamp, tangent and leveling screws are made of German silver. Clamp and tangent screws of improved construction, with counter spring. Clamp screw to upper plate is round, and clamp screw to lower plate is flat. This enables the Engineer to distinguish which screw he is using.

Horizontal Limb, 6 inches, graduated on **solid silver** to 20 minutes and numbered as shown on page 166.

Two finely graduated bubbles at right angles to each other.

Verniers, two opposite verniers (at 30° to telescope), reading to 30 seconds. See page 166.

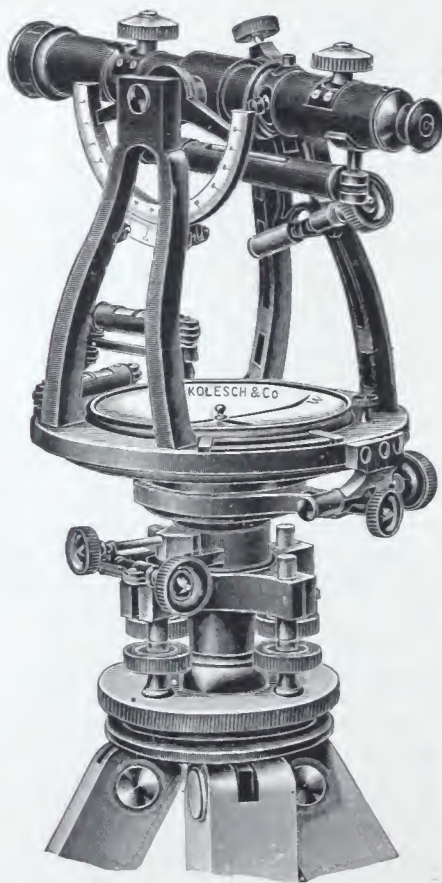
Compass, divided on **solid silver** to half degrees, with variation plate and improved bar needle, $4\frac{1}{2}$ inches long.

Instrument complete, in finely polished mahogany box, with plumb bob, adjusting pins, center key, screw driver, reading glass and solid or split leg tripod... each, \$200.00

8012 Engineers' Transit, same as No. 8010, but $6\frac{1}{2}$ inch horizontal limb plate and 5 inch needle..... " 205.00



Engineers' Improved Transit
with
Bubble to Telescope, and Vertical Arc.



8015 Engineers' Transit. (For description, see page 173.)



**Engineers' Improved Transit
with
Bubble to Telescope
and
Vertical Arc.**

8015 Engineers' Transit, Bent Standards, with powerful achromatic terrestrial telescope about 11 inches long; magnifying power about 24 diameters, which we have found to be the best for field and definition. The lenses are especially made and selected by the best European optical works. Aperture of object glass $1\frac{3}{16}$ inches. Dust cap and sunshade. Improved rack and pinion movement to eye piece and objective. Fine bubble ($4\frac{1}{2}$ inch vial) to telescope, graduated on the glass. Telescope reversible from both ends.

Cross and Stadia Hairs.

Shifting Center. The centers are extra long and made of three different kinds of metal to reduce friction.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

Screws. All clamp, tangent and leveling screws are made of German silver. Clamp and tangent screws of improved construction, with counter spring. Clamp screw to upper plate is round, and clamp screw to lower plate is flat. This enables the Engineer to distinguish which screw he is using.

Horizontal Limb, 6 inches, graduated on **solid silver** to 20 minutes and numbered as shown on page 166. Two finely graduated bubbles, at right angles to each other.

Verniers, 2 opposite verniers (at 30° to telescope), reading to 30 seconds. See page 166.

Compass, divided on **solid silver** to half degrees, with variation plate and improved bar needle, $4\frac{1}{2}$ inches long.

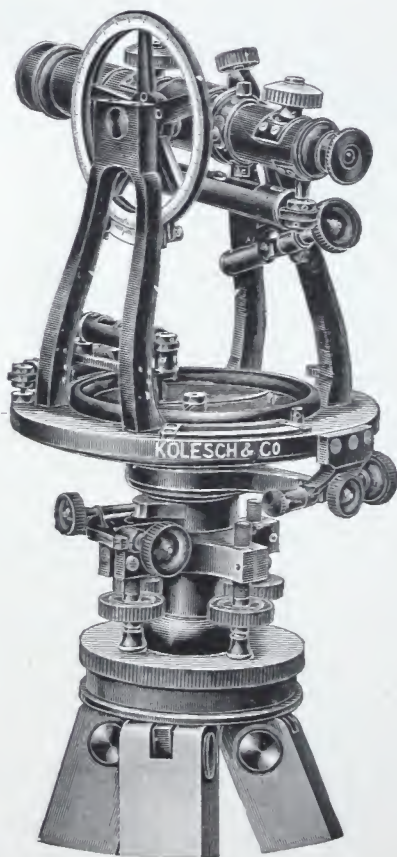
Vertical Arc, 5 inches, graduated on **solid silver** to half degrees, with vernier reading to single minutes.

Instrument complete, in finely polished mahogany box, with plumb bob, adjusting pins, center key, screw driver, reading glass and solid or split leg tripod.....each, \$220.00

8017 Engineers' Transit, same as No. 8015, but with $6\frac{1}{2}$ inch horizontal limb plate and 5 inch needle..... " 225.00



Engineers' Improved Transit
with
Bubble to Telescope, and Vertical Circle.



8020 Engineers' Transit. (For description, see page 175.)



Engineers' Improved Transit
with
Bubble to Telescope
and
Vertical Circle.

8020 Engineers' Transit, Bent Standards, with powerful achromatic terrestrial telescope about 11 inches long. Magnifying power about 24 diameters, which we have found to be the best for field and definition. The lenses are especially made and selected by the best European optical works. Aperture of object glass $1\frac{3}{8}$ inches. Dust cap and sun shade. Improved rack and pinion movement to eye-piece and objective. Fine bubble ($4\frac{1}{2}$ inch vial), to telescope, graduated on the glass. Telescope reversible from both ends.

Cross and Stadia Hairs.

Shifting Center. The centers are extra long and made of three different kinds of metal to reduce friction.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

Screws. All clamp, tangent and leveling screws are made of German silver. Clamp and tangent screws of improved construction, with counter spring. Clamp screw to upper plate is round, and clamp screw to lower plate is fiat. This enables the Engineer to distinguish which screw he is using.

Horizontal Limb, 6 inches, graduated on **solid silver** to 20 minutes, numbered as shown on page 166. Two finely graduated bubbles at right angles to each other.

Verniers, two opposite verniers (at 30° to telescope) reading to 30 seconds, see page 166.

Compass, divided on **solid silver** to half degrees, with variation plate and improved bar needle $4\frac{1}{2}$ inches long.

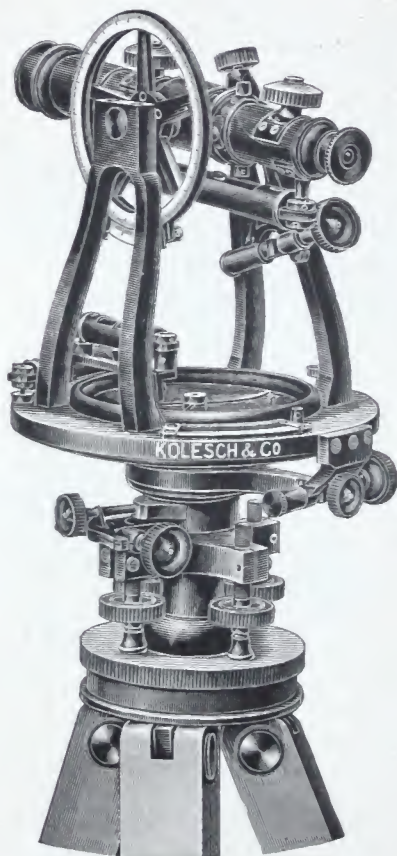
Vertical circle, 5 inches, graduated on **solid silver** to half degrees, with vernier reading to single minutes.

Instrument complete, in finely polished mahogany box, with plumb bob, adjusting pins, center key, screw driver, reading glass and solid or split leg tripod.....each, \$235.00

8022 Engineers' Transit, same as No. 8020, but with $6\frac{1}{2}$ inch horizontal limb plate and 5 inch needle..... " 240.00



Improved Mountain and Mining Transit.



8025 Improved Mountain and Mining Transit.

For description, see page 177.

Improved Mounting and Mining Transit.

8025 Mountain and Mining Transit, Bent Standards, with powerful achromatic terrestrial telescope about $8\frac{1}{2}$ inches long. Magnifying power about 24 diameters, which we have found to be the best for field and definition. The lenses are especially made and selected by the best European optical works. Aperture of object glass 1 inch. Dust cap and sun shade. Improved rack and pinion movement to eye-piece and objective. Fine bubble (4 inch vial) to telescope, graduated on the glass. Telescope reversible from both ends.

Cross and Stadia Hairs.

Shifting Centers. The centers are extra long, made of three different kinds of metal to reduce friction.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

Screws. All clamp, tangent and leveling screws are made of German silver. Clamp and tangent screws of improved construction, with counter spring. Clamp screw to upper plate is round, and clamp screw to lower plate is flat. This enables the Engineer to distinguish which screw he is using.

Horizontal Limb, $5\frac{1}{2}$ inches, graduated on **solid silver** to 20 minutes and numbered as shown on page 166. Two finely graduated bubbles at right angles to each other.

Verniers, two opposite verniers (at 30° to telescope) reading to 30 seconds. See page 166.

Compass, divided on **solid silver**, to half degrees, with variation plate and improved bar needle 4 inches long.

Vertical Circle, 4 inches, graduated on **solid silver** to half degrees, with vernier reading to single minutes.

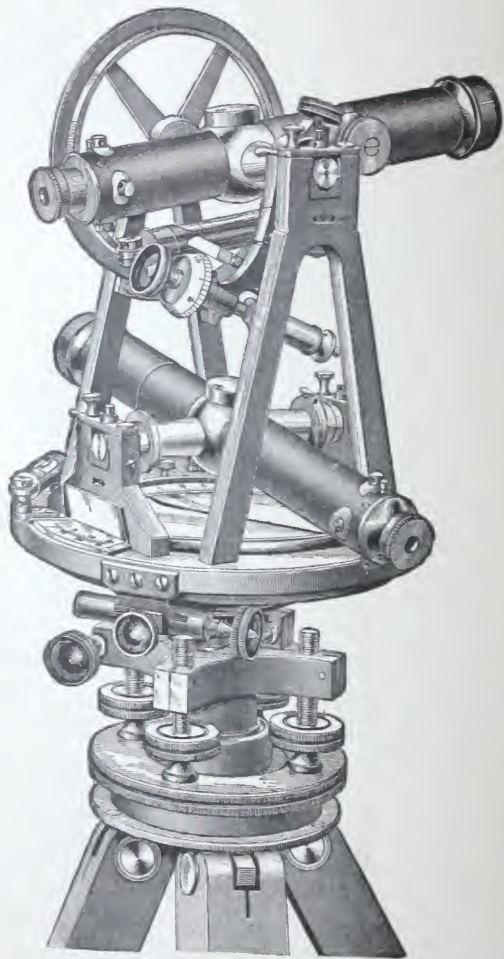
Instrument complete, in finely polished mahogany box, with plumb bob, adjusting pins, center key, screw driver, reading glass and solid or split leg tripod.....each, \$220.00

8026 Mountain and Mining Transit, same as No. 8025, but with vertical arc instead of vertical circle..... " 205.00

8027 Mountain and Mining Transit, same as No. 8025, but without vertical circle..... " 190.00



Right-Angle Transit.



For description, see page 179.



Right-Angle Transit.

8030 Right-Angle Transit, Straight Standards, with theodolite axis and gradient screw. Two interchangeable powerful achromatic astronomical telescopes. Upper telescope about 10 inches long, lower telescope about 11 inches long. Magnifying power of telescopes about 24 diameters, which we have found to be the best for field and definition. Lenses are especially made and selected by the best European optical works. Diameter of object glasses $1\frac{1}{8}$ inches. Stadia hairs in both telescopes, also dust caps, sun shades and improved rack and pinion movements to objectives. Fine bubble (4 inch vial) to upper telescope graduated on the glass. Clamp and tangent screws of improved pattern with counter springs. Clamp screw to upper plate is round, and clamp screw to lower plate is flat. This enables the Engineer to distinguish which screw he is using.

Compass divided on **solid silver** to half degrees, with improved needle $4\frac{1}{2}$ inches. Horizontal limb, 6 inches, graduated on **solid silver** to 20 minutes, two opposite verniers, reading to 20 seconds, with glass shades. Two finely graduated bubbles to horizontal limbs.

Vertical Circle, 5 inches, graduated on **solid silver** to half degrees, reading by vernier to single minutes. Shifting center. All leveling and tangent screws of German silver.

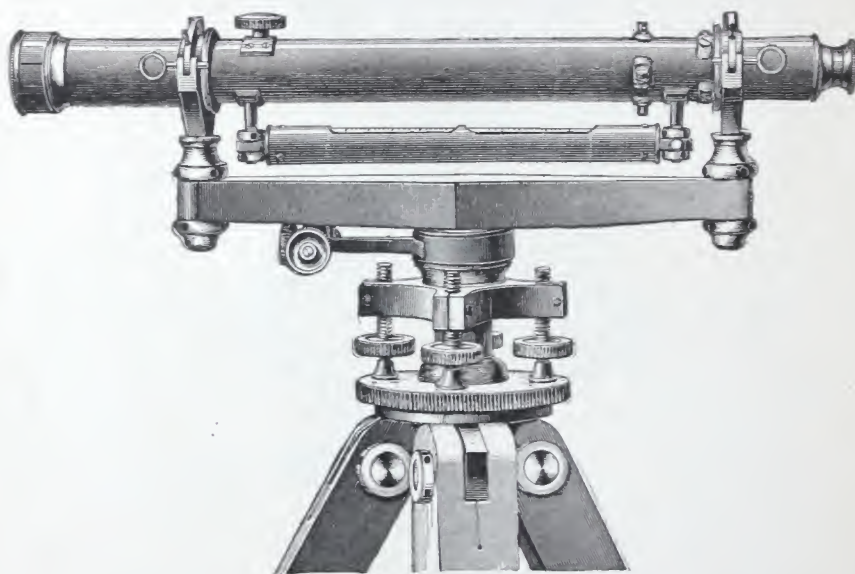
Instrument complete, with plumb bob, adjusting pins, etc., in finely polished mahogany box, with tripod.....each, \$350.00

The above can also be made with terrestrial telescopes of the same patterns as shown in Transits No. 8010 to No. 8027.

The above style represents an instrument of which we have made a number for city work. As they have to be made to order, we can make any changes desired to suit the requirements of the special work they are intended for. Prices of special instruments on application.



Engineers' Y Level.



8035 Engineers' Y Level. (For description, see page 181.)



Engineers'

Y Level.

8035 **Engineers' Y Level**, with powerful achromatic terrestrial telescope 18 inches long. Magnifying power about 28 diameters, which we have found to be the best for field and definition. Lenses of the very best domestic make. Aperture of object glass $1\frac{3}{8}$ inch. Dust cap and sun shade. Improved rack and pinion movement to objective. Adjustable eye-piece for focusing the cross hairs. Very fine, sensitive bubble (7 inch vial) graduated on the glass, adjustable vertically and horizontally.

Centers and Telescope Rings are very stout, long and of hard bell metal.

Telescope is provided with stop, so that cross hairs can be placed in a vertical and horizontal position.

Telescope Bar is cast hollow and provided with ribs to combine utmost strength with light weight.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

Screws. Clamp and tangent screws are attached to the bar and revolve with it. Tangent screw of improved construction with counter spring.

Instrument complete, in finely polished mahogany box, with adjusting pins and solid or split leg tripod.....each, \$100.00

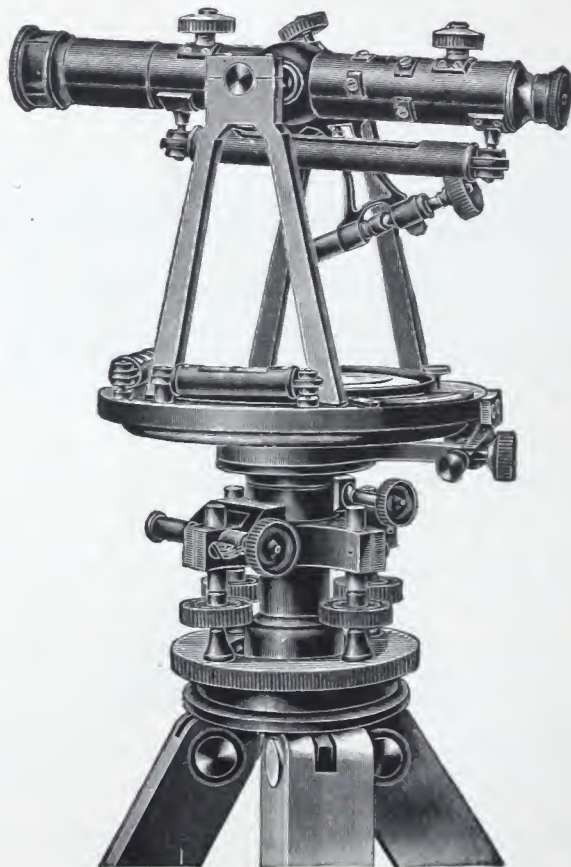
8036 **Engineers' Y Level**, same as No. 8035, but 15 inch telescope..... " 90.00

8037 **Engineers' Y Level**, same as No. 8035, but 20 inch telescope..... " 110.00

8038 **Engineers' Y Level**, same as No. 8035, but 22 inch telescope..... " 120.00



Engineers' Transit, with Bubble to Telescope.



8040 Engineers' Transit. (For description, see page 183.)



Engineers' Transit with Bubble to Telescope.

8040 Engineers' Transit, Straight Standards, with powerful achromatic terrestrial telescope about 11 inches long. Magnifying power about 24 diameters, which we have found to be the best for field and definition. Lenses of the very best domestic make. Aperture of object glass $1\frac{3}{8}$ inch. Dust cap and sun shade. Improved rack and pinion movement to eyepiece and objective. Fine bubble ($\frac{1}{2}$ inch vial) to telescope, graduated on the glass. Telescope reversible from both ends.

Cross and Stadia Hairs.

Shifting Centers. The centers are extra long, made of three different kinds of metal to reduce friction.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

Screws. All clamp and tangent screws of improved construction, with counter spring. Clamp screw to upper plate is round, and clamp screw to lower plate is flat. This enables the Engineer to distinguish which screw he is using.

Horizontal Limb, 6 inches, graduated on solid silver to 20 minutes, numbered as shown on page 166. Two finely graduated bubbles at right angles to each other.

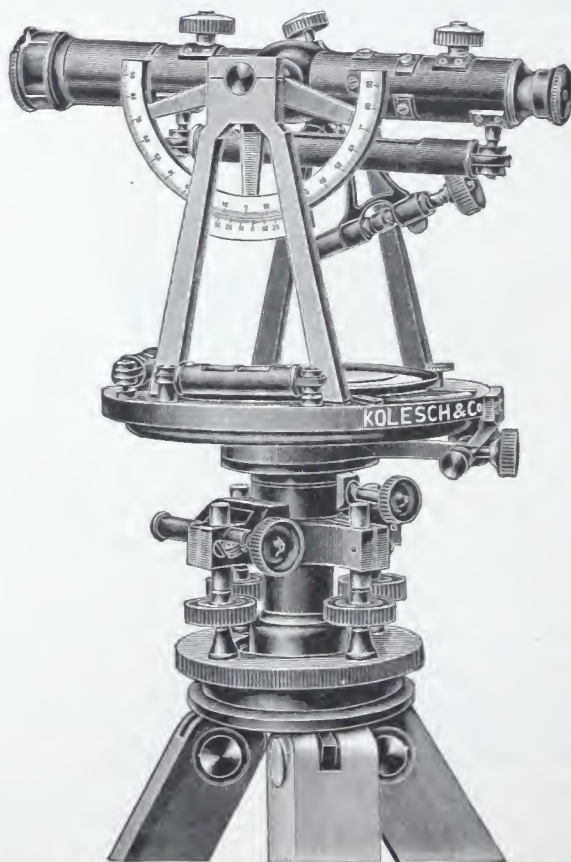
Verniers, two opposite verniers (at 30° to telescope), reading to 30 seconds. See page 166.

Compass, divided on solid silver to half degrees, with variation plate and improved bar needle, $4\frac{1}{2}$ inches long.

Instrument complete, in finely polished mahogany box, with plumb bob, adjusting pins, center key, screw driver, reading glass and solid or split leg tripod.....each, \$160.00

8042 Engineers' Transit, same as No. 8040, but with $6\frac{1}{2}$ inch horizontal limb plate and 5 inch needle..... " 170.00

Engineers' Transit
with
Bubble to Telescope
and
Vertical Arc.



8045 Engineer's Transit. (For description, see page 185.)



Engineers' Transit
with
Bubble to Telescope
and
Vertical Arc.

8045 Engineers' Transit, Straight Standards, with powerful achromatic terrestrial telescope, about 11 inches long. Magnifying power about 24 diameters, which we have found to be the best for field and definition. Lenses of the very best domestic make. Aperture of object glass $1\frac{3}{8}$ inch. Dust cap and sun shade. Improved rack and pinion movement to eyepiece and objective. Fine bubble ($\frac{1}{2}$ inch vial) to telescope, graduated on the glass. Telescope reversible from both ends.

Cross and Stadia Hairs.

Shifting Centers. The centers are extra long, made of three different kinds of metal to reduce friction.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

Screws. All clamp and tangent screws of improved construction, with counter spring. Clamp screw to upper plate is round, and clamp screw to lower plate is flat. This enables the Engineer to distinguish which screw he is using.

Horizontal Limb, 6 inches, graduated on solid silver to 20 minutes, numbered as shown on page 166. Two finely graduated bubbles, at right angles to each other.

Verniers, two opposite verniers (at 30° to telescope), reading to 30 seconds. See page 166.

Compass, divided on solid silver to half degrees, with variation plate and improved bar needle, $4\frac{1}{2}$ inches long.

Vertical Arc, 5 inches, graduated on solid silver to half degrees, with vernier reading to single minutes.

Instrument complete, in finely polished mahogany box, with plumb bob, adjusting pins, center key, screw driver, reading glass and solid or split leg tripod.....each, \$170.00

8047 Engineers' Transit, same as No. 8045, but with $6\frac{1}{2}$ inch horizontal limb plate and 5 inch needle..... " 180.00



Engineers' Transit
with
Bubble to Telescope
and
Vertical Circle.



8050 Engineers' Transit. (For description, see page 187.)



Engineers' Transit with Bubble to Telescope and Vertical Circle.

8050 **Engineers' Transit, Straight Standards,** with powerful achromatic terrestrial telescope about 11 inches long. Magnifying power about 24 diameters, which we have found to be the best for field and definition. Lenses of the very best domestic make. Aperture of object glass $1\frac{3}{8}$ inches. Dust cap and sun shade. Improved rack and pinion movement to eyepiece and objective. Fine bubble ($\frac{1}{4}$ inch vial) to telescope, graduated on the glass. Telescope reversible from both ends.

Cross and Stadia Hairs.

Shifting Centers. The centers are extra long, made of three different kinds of metal to reduce friction.

The Four Leveling Arms are slotted and can be adjusted by means of the set screws.

Screws. All clamp and tangent screws of improved construction, with counter spring. Clamp screw to upper plate is round, and clamp screw to lower plate is flat. This enables the Engineer to distinguish which screw he is using.

Horizontal Limb, 6 inches, graduated on **solid silver** to 20 minutes, numbered as shown on page 166. Two finely graduated bubbles, at right angles to each other.

Verniers, two opposite verniers (at 30° to telescope), reading to 30 seconds. See page 166.

Compass, divided on **solid silver** to half degrees, with variation plate and improved bar needle, $4\frac{1}{2}$ inches long.

Vertical Circle, 5 inches, graduated on **solid silver** to half degrees, with vernier reading to single minutes.

Instrument complete, in finely polished mahogany box, with plumb bob, adjusting pins, center key, screw driver, reading glass and solid or split leg tripod.....each, \$175.00

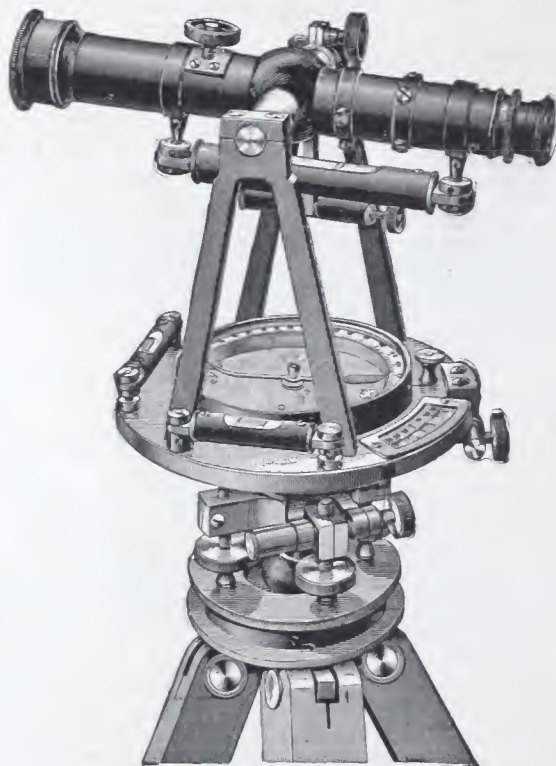
8052 **Engineers' Transit,** same as No. 8050, but with $6\frac{1}{2}$ inch horizontal limb plate and 5 inch needle..... " 185.00

8053 **Mountain and Mining Transit,** same as No. 8050, but with $8\frac{1}{2}$ inch telescope, $5\frac{1}{2}$ inch horizontal limb plate, 4 inch needle and 4 inch vertical circle..... " 170.00



Pioneer Transit, with Bubble to Telescope.

This instrument is designed for light and moderately accurate work, and especially recommended for rapid and preliminary surveying and all such work where a light, portable instrument is desired.

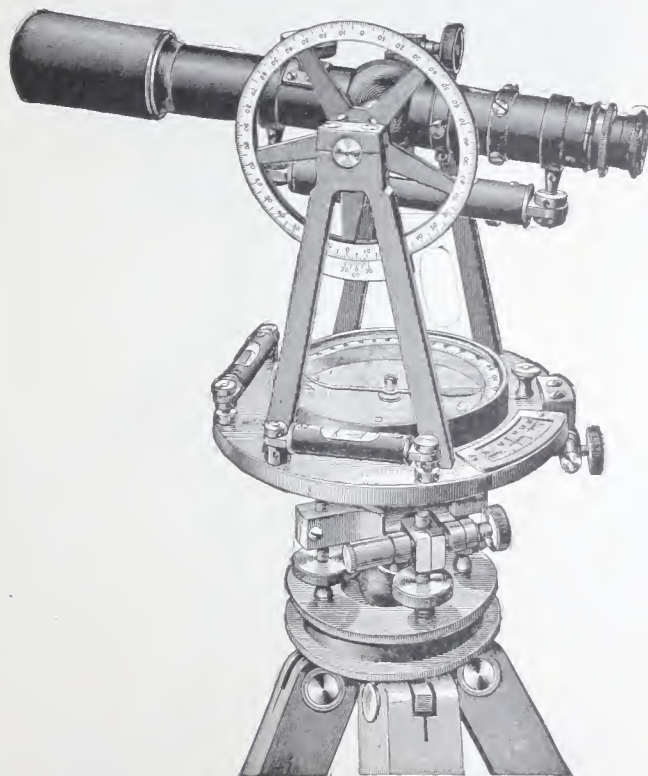


- 8060 **Pioneer Transit.** Telescope about $8\frac{1}{2}$ inches long, magnifying power about 19 diameters. Lenses of the very best domestic make. Objective, 1 inch. Dust cap and sun shade. Rack and pinion movement to objective. Adjustable eyepiece for focusing cross and stadia hairs. Long ground bubble to telescope, graduated on the glass. Telescope reversible from both ends. **Compass** on raised ring, silvered, divided to degrees, with variation plate; needle 3 inch, with jewelled center. **Horizontal Limb**, 5 inch, divided on solid silver to half degrees, with one vernier reading to minutes. **Two Bubbles** to horizontal limb. **Clamp and Tangent Adjustment** to plate and telescope. All tangent screws with counter springs. Four leveling screws. **Shifting Center.** Instrument complete, in neatly polished box, with plumb bob, reading glass, adjusting pins and solid or split leg tripod.....each, \$100.00
 Extension tripod in place of regular tripod, extra..... " 6.00



Pioneer Transit, with Bubble to Telescope and Vertical Circle.

This instrument is designed for light and moderately accurate work, and especially recommended for rapid and preliminary surveying and all such work where a light portable instrument is desired; it is also very serviceable for mining work.

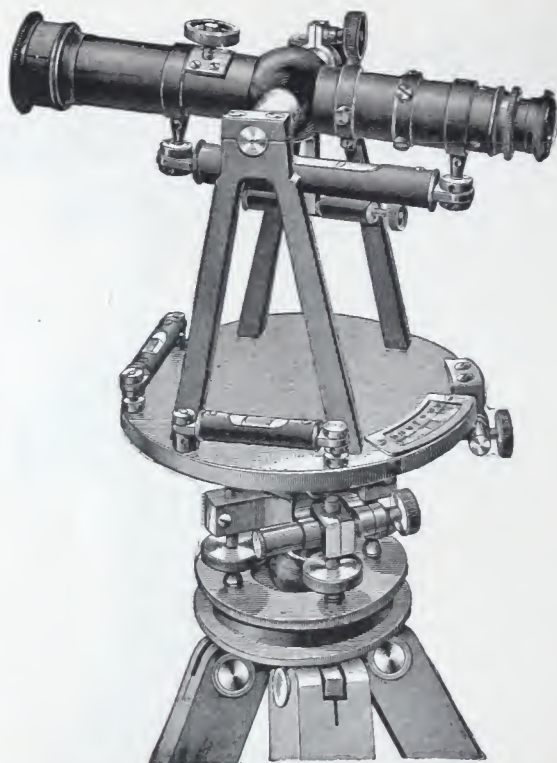


- 8065 **Pioneer Transit.** Telescope about $8\frac{1}{2}$ inches long, magnifying powers about 19 diameters. Lenses of the very best domestic make. Objective, 1 inch. Dust cap and sun shade. Rack and pinion movement to objective. Adjustable eye-piece for focusing cross and stadia hairs. Long ground bubble to telescope, graduated on the glass. Telescope reversible from both ends. **Compass** on raised ring, silvered, divided to degrees, with variation plate; needle 3 inch, with jewelled center. **Horizontal Limb**, 5 inch, divided on solid silver to half degrees, with one vernier reading to minutes. **Two Bubbles** to horizontal limb. **Clamp and Tangent Adjustment** to plate and telescope. All tangent screws with counter springs. **Vertical Circle**, $3\frac{1}{2}$ inches, silvered, divided to degrees, reading by vernier to 5 minutes. **Four Leveling Screws.** **Shifting Center.** Instrument complete, in neatly polished box, with plumb bob, reading glass, adjusting pins and solid or split leg tripod.....each, \$110.00
- 8067 **Pioneer Transit**, same as 8065, but with vertical circle reading by vernier to minutes..... " 115.00
 Extension tripod in place of regular tripod, extra..... " 6.00



Architects' Transit.

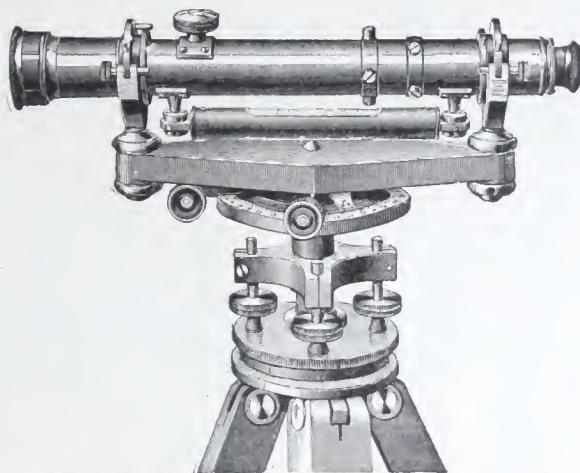
These instruments are designed for light and moderately accurate work. They are especially recommended to Architects and Builders for taking angles, leveling foundations, examining walls under way of construction, giving lines and levels for buildings, etc.



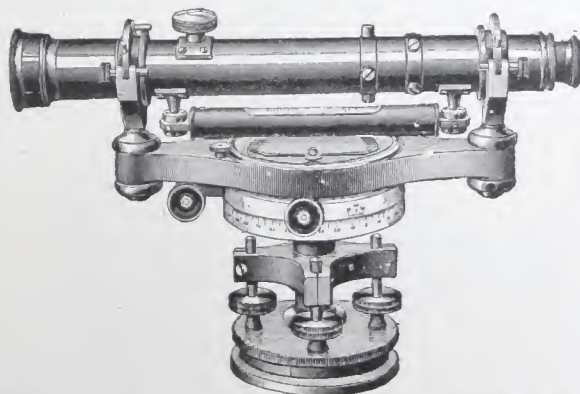
- 8070 **Architects' Transit.** Telescope about $8\frac{1}{2}$ inches long, magnifying power about 19 diameters. Lenses of the very best domestic make. Objective 1 inch. Dust cap and sun shade. Rack and pinion movement to objective. Adjustable eyepiece for focusing cross hairs. Long ground bubble to telescope, graduated on the glass. Telescope reversible from both ends. **Horizontal Limb**, 5 inch, divided to half degrees, with one vernier reading to minutes. **Two Bubbles** to horizontal limb. **Clamp and Tangent Adjustment** to plate and telescope. **All Tangent Screws** with counter springs. **Four Leveling Screws**. **Shifting Center**. Instrument complete, in neatly polished box, with plumb bob, adjusting pins, and solid or split leg tripod.....each, \$85.00
- 8072 **Architects' Transit**, same as No. 8070, but with vertical circle $3\frac{1}{2}$ inch, divided to degrees, reading by vernier to 5 minutes..... " 95.00
 Extension tripod in place of regular tripod, extra..... " 6.00

Architects' Level.

The following instruments are especially designed for and recommended to Architects, Builders and Contractors for leveling walls, giving lines and levels for buildings, laying out angles, grading streets, sewers, drains, etc.



- 8075 Architects' Level.** Telescope about 12 inches long, magnifying power about 19 diameters. Lenses of the very best domestic make. Objective $1\frac{1}{8}$ inch. Dust cap and sun shade. Rack and pinion movement to objective. Adjustable eyepiece for focusing cross hairs. Fine bubble ($4\frac{1}{2}$ in. vial) to telescope, graduated on the glass. **Horizontal Circle** 3 inches, divided to degrees, reading by a vernier (which is attached to the spindle) to 5 minutes. The horizontal circle is reversible for the purpose of setting same at zero at any given point. **Clamp and Tangent Screw** with counter spring to level bar. **Four Leveling Screws.** Instrument complete in neatly polished box with plumb bob, adjusting pins, hardwood tripod, metal trivet and book of instructions (Trivet shown in cut No. 8080).....each, \$45.00

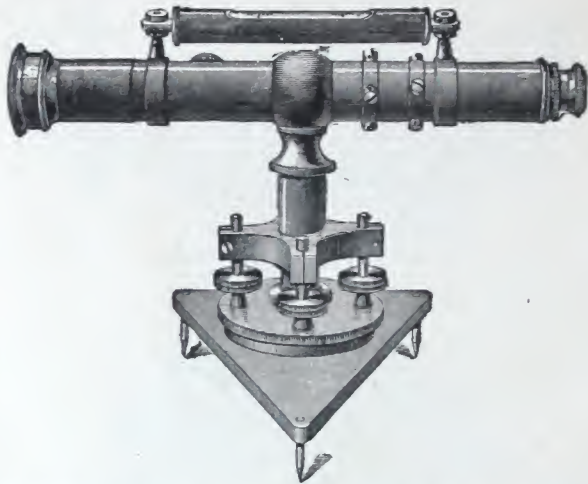


- 8077 Architects' Level.** Same as No. 8075, but with **Compass**, divided on raised ring to degrees, and improved needle, $2\frac{3}{4}$ inches.....each, \$60.00

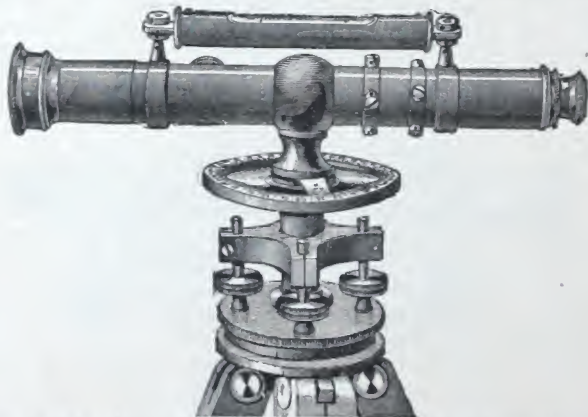


Dumpy Level.

The following instruments are of very simple construction, but, like the Architects' and Builders' Levels shown on the preceding pages, are well made, accurate leveling instruments, and will be found of great value to the builder, bricklayer, wheelwright, farmer, landscape gardener, etc.

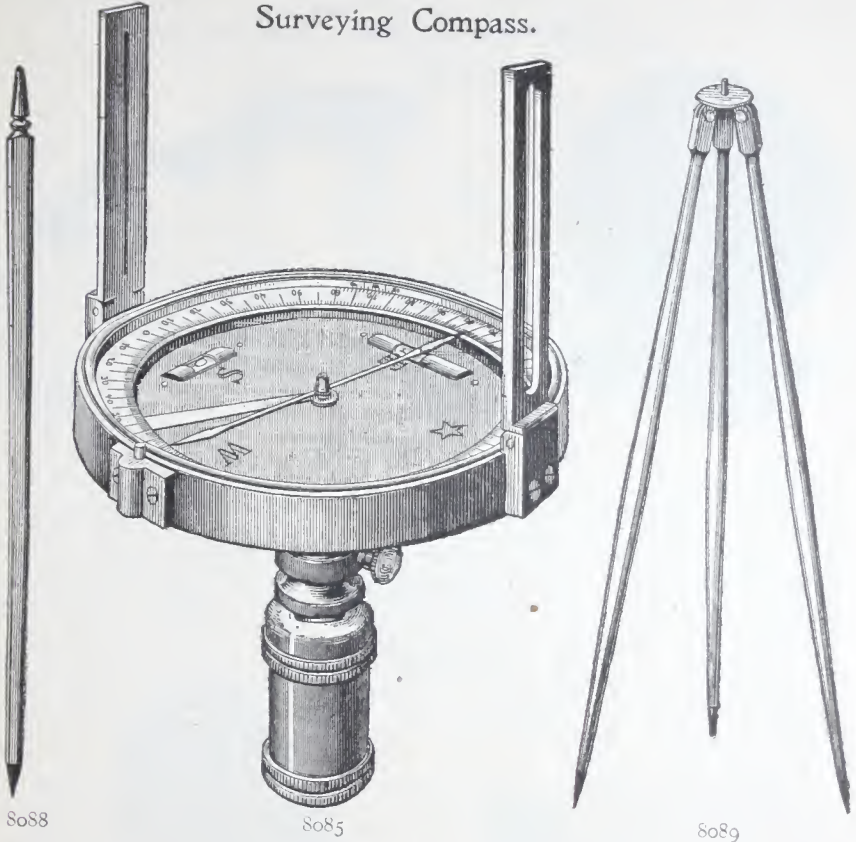


- 8080 **Dumpy Level.** Telescope about 12 in. long, with adjustable eye-piece for focusing cross hairs, rack and pinion movement for focusing objective, dust cap, sun shade, graduated bubble to telescope. Complete in neatly polished box, with plumb bob, adjusting pins, hardwood tripod and metal trivet, each, \$35.00

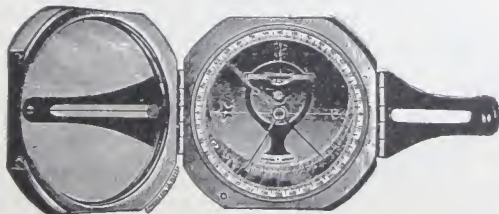


- 8082 **Dumpy Level.** Telescope about 12 in. long, with adjustable eye piece for focusing cross hairs, rack and pinion movement for focusing objective, dust cap, sun shade, graduated bubble to telescope; horizontal circle 3 inches, divided to degrees, reading by a vernier (which is attached to the spindle) to 5 minutes. Horizontal circle is reversible for the purpose of setting the instrument at zero at any given point. Complete in neatly polished box, with plumb bob, adjusting pins, hardwood tripod and metal trivet (shown in cut above). . each, \$40.00

Surveying Compass.



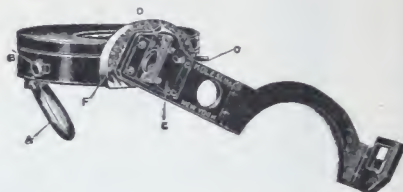
- 8088 Jacob Staff, 54 in., hardwood, iron shoe.....each, \$18.00
- 8085 Surveying Compass, 4 inch needle with folding sights, raised ring, graduated to degrees, variation plate (regulated by means of a pinion with capstan head), two level bubbles, ball joint and socket for mounting, in polished mahogany case.....each, \$18.00
- 8089 Tripod, hardwood, with staff head brass top for compass, No. 8085 " 5.00



- 8090 Brunton's Patent Pocket Transit, with directions.....each, \$25.00
- This Pocket Instrument takes the place of a Sighting Compass, Clinometer, Prismatic Compass and Abney or Locke Level. (Weighs but 8 oz.)



Verschoyle Pocket Transit.



- A. Thumb Loop.
- B. Clamp for lifting the needle from contact with jewel when instrument is not in use.
- C. Press Pin, for bringing the needle to rest quickly when taking an observation.
- D. Face of Prism Box, showing aperture leading to compass and sight.
- E. Back of Prism Box, showing extension of back sight aperture.
- F. Graduated Vertical Arc.

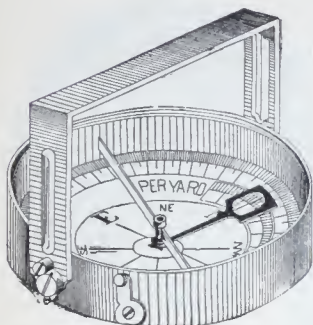
This instrument was designed by a mining engineer of practical experience, and has met a ready sale among mining engineers and others who want a light, portable instrument for preliminary surveys. Its distinguishing feature is that, owing to its novel construction, only one observation is necessary to obtain both the magnetic bearing and the vertical angle of any distant point. It is also specially adapted for use in difficult positions, such as are always liable to occur in filling in the rougher details in a mining survey. For rapid topographical work and working in constrained positions, the fact that half the labor is saved should be of interest to those who have to use this class of instrument. Another important point is that its efficiency is not determined by the length of the diameter of the compass, as is the case with the ordinary Prismatic Compass. With even a small instrument the same length of sight is obtained as with a 6" or 7" Prismatic Compass. It is constructed to withstand hard usage. The engineer himself can make all necessary adjustments, which is another point in its favor.

To use the instrument for obtaining horizontal and vertical angles after freeing the needle and unfolding the arm, grasp the compass box in the left hand, and then with the extended fingers of the right hand lightly grasp the arm and bring the distant target or light to the intersection of the cross lines at the end of the arm. When holding the arm firmly in that position, with the left hand slightly revolve the compass box until the small level bubble is seen through the prism to be at the central mark. The magnetic bearing will now be plainly visible in the prism at the same time that the target is viewed along the sight line, and the angle of depression or elevation is automatically recorded in the vertical arc. Both readings can then be booked at the same time without further observation. To use the instrument as a clinometer lay the bottom side of the arm on the object to be observed, and looking through the window at the top of the compass box slightly revolve the box until the small bubble comes to its center. The angle may then be read off the vertical arc. When not in use always throw the needle off the point by the means provided and fold up the arms.

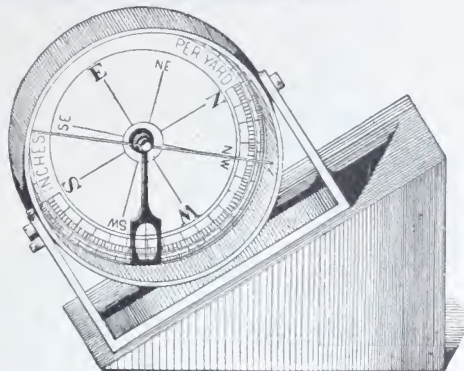
Should it be necessary to alter the relative position of the divided ring and magnetic needle, this can be accomplished by removing the cover and altering the position of the needle immediately under the divided ring. Adjustment for magnetic variation may be obtained in this manner, without liability to disturb other adjustment.

8092 Verschoyle Pocket Transit, bronzed brass, $3\frac{3}{8}$ in. diameter; needle, $2\frac{1}{2}$ in.; compass to half degrees; vertical arc to degrees. Weight about 15 oz., in strong leather case.....each, \$40.00

Combined Sight Compass and Clinometer.



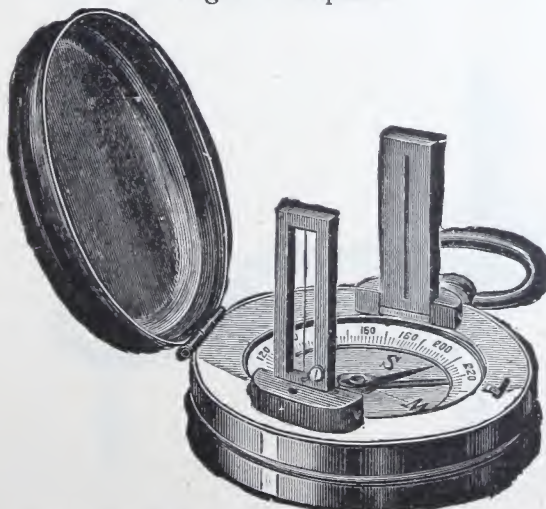
AS A SIGHT COMPASS.



AS A CLINOMETER.

- 8095 Combined Sight Compass and Clinometer, $2\frac{1}{2}$ in. diameter, silvered metal dial, graduated to one degree, bar needle with agate center and stop. Pivoted sights, which are turned down to form a base when used as a Clinometer, in case.....each, \$7.25
- 8096 Same as No. 8095, but 3 in. diameter, in case..... " 8.75
- 8097 Same as No. 8095, but 4 in. diameter, in case..... " 10.50

Sight Compass.



Pocket Compass, watch pattern, with folding sights, bar needle with agate center, and stop to needle.

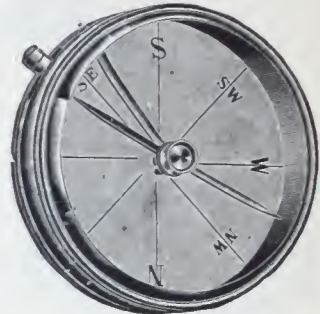
- 8100 In metal case, 2 in.....each, \$4.60
- 8102 In metal case, $2\frac{3}{8}$ in..... " 5.25
- 8104 In metal case, $2\frac{3}{4}$ in..... " 6.00



Magnetic Pocket Compasses.

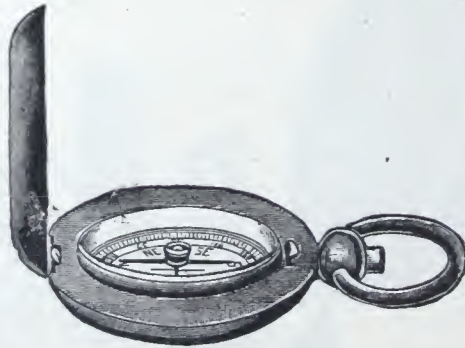


8110-8112



8114-8116

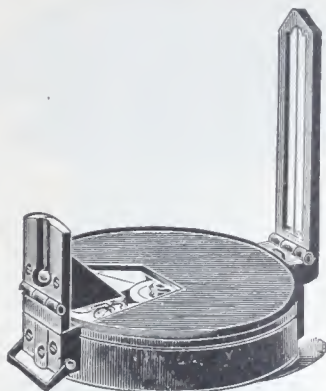
8110	Pocket Compass, brass, watch pattern, paper dial :			
	Each.....	$1\frac{3}{4}$ \$.20	$1\frac{3}{8}$.25	$1\frac{3}{4}$ inch .30
8112	Pocket Compass, brass, watch pattern, metal dial, stop to needle :			
	Each.....	$1\frac{3}{4}$ \$.50	$1\frac{1}{2}$.55	2 inch .60
8114	Pocket Compass, brass, pull off cover, paper dial :			
	Each.....	$1\frac{1}{4}$ \$.25	$1\frac{3}{8}$.30	$1\frac{5}{8}$ inch .35
8116	Pocket Compass, brass, pull off cover, metal dial, stop to needle :			
	Each.....	$1\frac{3}{4}$ \$.85	$1\frac{3}{8}$.95	$1\frac{3}{4}$ inch .95



8118 and 8120

8118	Pocket Compass, brass, watch pattern, hinged cover, metal dial, divided on raised ring, stop to needle, agate center :			
	Each.....	$1\frac{3}{4}$ \$1.50		2 inch 1.75
8120	Pocket Compass, nickel plated, watch pattern, hunting case, spring cover, metal dial, automatic stop, jewelled center, bar needle, divisions on raised ring :			
	Each.....	$1\frac{1}{2}$ \$3.00	$1\frac{3}{4}$ 3.25	2 inch 3.50

Prismatic Surveying Instruments.

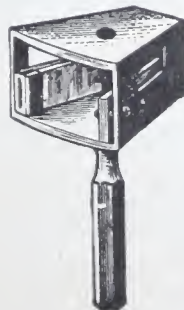


- 8125 Hutchinson's Prismatic Compass, improved form, with opening in cover, more portable than ordinary form, 3 inch diameter, floating card dial, jewelled center, folding sight with vertical wire, in leather sling case.....each, \$16.00
- 8127 Same as 8125, 4 inch diameter, in leather sling case..... " 20.00

Angle Mirrors.



8130

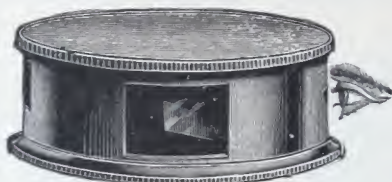


8132

- 8130 Angle Mirror, for right angles, with small plumb bob, detachable handle, in case.....each, \$7.50
- 8132 Angle Mirror, for right angles, plain, in case..... " 5.00

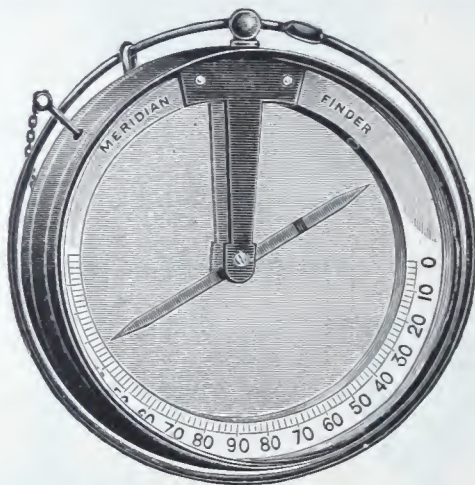


Optical Squares.



- 8135 Optical Square, in morocco case.....each, \$10.00
 8136 Optical Square, with adjusting screw, in morocco case..... " 14.50

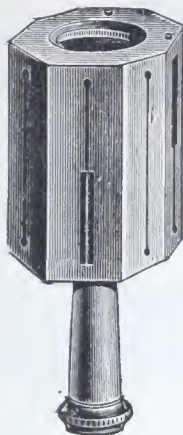
Miners' Compass or Dipping Needle.



In the hands of the prospector the Miners' Compass or Dipping Needle proves a serviceable guide to the discovery and location of magnetic iron ore. In this instrument the magnetic needle is carefully balanced upon a horizontal axis within a graduated circle, and in which the needle will be found to assume a position inclined to the horizon. This angle of deviation is called the inclination or dip, and varies in different latitudes, and even at different times in the same place. Hence, in reading the needle for the suspected presence of magnetic iron ore, the observer must not only be governed by his instrument, but must also draw into requisition his knowledge of the general geological formation of the place of his survey; and depending on his experience, he will be enabled to approximate as to the probable mass and the depth of the ore from the surface. When used for tracing ore the observer should hold the ring in his hands and keep the needle north and south, standing with his face to the west. The inclination of the needle as read off on the graduated scale will show the dip. If the compass is held horizontally it serves as an ordinary compass.

- 8138 Miners' Compass or Dipping Needle, 3 in., velvet lined case.....each, \$12.00
 8139 Miners' Compass or Dipping Needle, Norwegian, has a motion in azimuth and in altitude, in case..... " 15.00

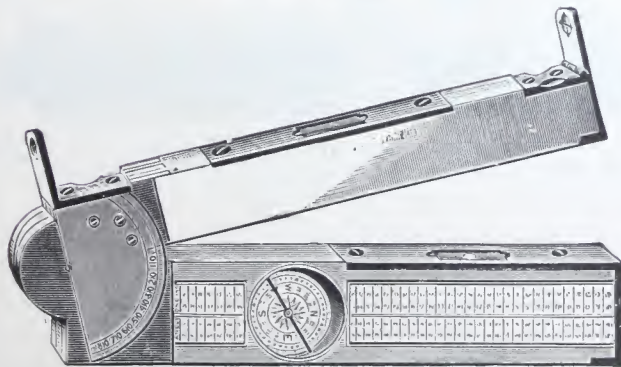
Cross Staff Heads.



- 8140 Cross Staff Head, $2\frac{1}{4}$ in., octagonal, for Jacob Staff, in case.....each, \$3.00
 8141 Same as 8140, $2\frac{1}{4}$ in., in case..... " 3.25
 8142 Same as 8140, 3 in., in case..... " 3.70

For Jacob Staff and Tripods, see page 193.

Clinometer Rule.

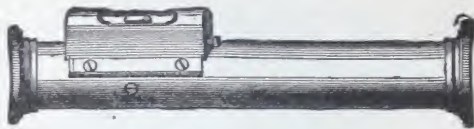


This exceedingly useful instrument is used for ascertaining the height of any object at a known distance from the point of observation. After the angle is ascertained, a corresponding mark on the rule will give the rise or fall in any given measured distance.

- 8145 Pocket Clinometer, boxwood, brass mounts, with folding sights and two spirit levels, in leather case.....each, \$12.50
 8147 Same as 8145, without folding sights..... " 9.50



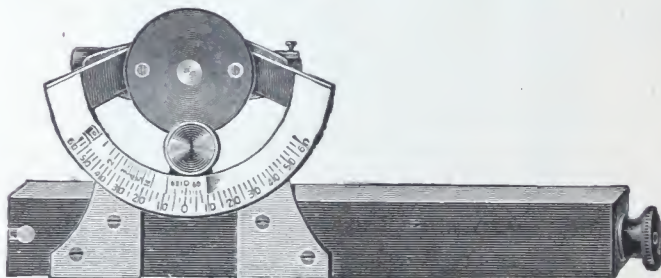
Hand Levels.



- | | | |
|------|---|--------------|
| 8150 | Locke's Hand Level, bronzed, in leather case..... | each, \$7.00 |
| 8152 | Locke's Hand Level, nickel plated, in leather case..... | " 7.25 |
| 8154 | Locke's Hand Level, German silver, in leather case..... | " 8.00 |
| 8156 | Locke's Hand Level, brass, plain..... | " 5.00 |



- | | | |
|------|---|--------------|
| 8160 | Square Hand Level, in leather case..... | each, \$4.50 |
|------|---|--------------|



- | | | |
|------|---|---------------|
| 8162 | Abney's Hand Level and Clinometer, in mahogany case..... | each, \$13.50 |
| 8164 | Abney's Hand Level and Clinometer, with bar needle compass and
socket for staff, in mahogany case..... | " 18.00 |

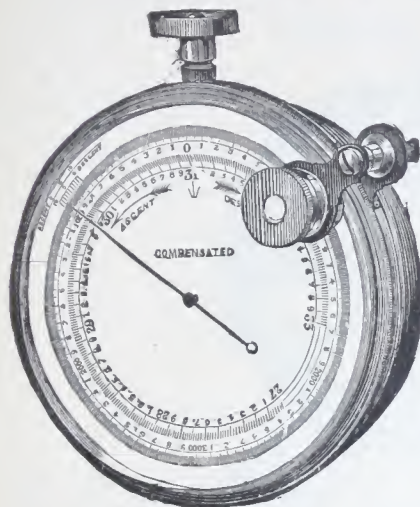
Rod Level.



- | | | |
|------|---|--------------|
| 8170 | Rod Level, metal, round level vial, 1 inch diameter.... | each, \$3.00 |
|------|---|--------------|

A convenient tool for determining whether the rod is held in a perpendicular position. Can be clasped against the rod by holding the two in the hand, or can be attached to the rod by a screw, through a slot provided for this purpose.

Aneroid Barometers.



8175-8181



8185-8198

- 8175 Surveying Aneroid, 3 in. diameter, best quality, bronzed metal case, silvered metal dial, with vernier scale operated by rack and pinion, reading to 5 feet, adjustable reading lens, compensated for temperature, with altitude scale to 6,000 feet, in leather sling case.....each, \$50.00
- 8177 Same as 8175, but 5 in. diameter, vernier scale reading to one foot, " 58.00
- 8179 Same as 8175, but altitude scale arranged for mining purposes, 4,000 feet ascent, 2,000 feet descent. " 50.00
- 8181 Same as 8179, but 5 in. diameter..... " 53.50

Standard Aneroid Barometers furnished at short notice, price and description on application.

- 8185 Watch form Aneroid, $1\frac{3}{4}$ in. diameter, gilt case, medium quality, silvered metal dial, revolving altitude scale to 8,000 feet, compensated for temperature, in morocco snap case.....each, \$12.00
- 8187 Same as No. 8185, with altitude scale to 10,000 feet..... " 13.00
- 8189 Same as No. 8185, with altitude scale to 16,000 feet..... " 15.00
- 8190 Watch form Aneroid, $1\frac{3}{4}$ in. diameter, gilt case, best quality, silvered metal dial, revolving altitude scale to 8,000 feet, compensated for temperature, in morocco snap case.....each, \$17.50
- 8192 Same as No. 8190, with altitude scale to 3,000 feet..... " 20.00
- 8194 Same as No. 8190, with altitude scale to 10,000 feet..... " 18.50
- 8196 Same as No. 8190, with altitude scale to 16,000 feet..... " 21.00
- 8198 Same as No. 8190, with altitude scale to 20,000 feet..... " 22.50



Aneroid Barometers.

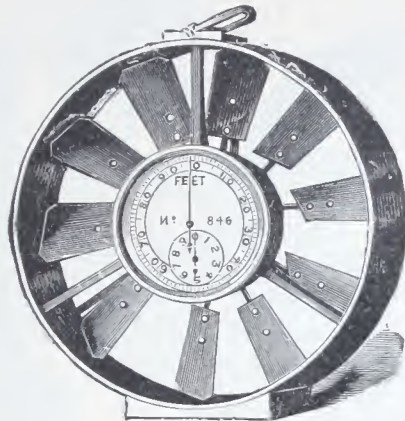
Continued.



- | | | |
|------|--|---------------|
| 8200 | Pocket size Aneroid, 2½ in. diameter, gilt case, best quality, silvered metal dial, revolving altitude scale to 8,000 feet, compensated for temperature, in morocco snap case..... | each, \$18.75 |
| 8202 | Same as No. 8200, with altitude scale to 3,000 feet..... | " 19.50 |
| 8204 | Same as No. 8200, with altitude scale to 10,000 feet..... | " 20.50 |
| 8206 | Same as No. 8200, with altitude scale to 16,000 feet..... | " 21.50 |
| 8208 | Same as No. 8200, with altitude scale to 20,000 feet..... | " 23.75 |

Anemometers.

For registering the velocity of air currents in mines, tunnels, flues of furnaces, sewers, etc.



- | | | |
|------|---|---------|
| 8215 | Biram's Anemometer, 3 inches, 2 dials reading to 1,000 feet, in case, each, | \$20.25 |
| 8217 | Biram's Anemometer, 4 inches, 2 dials reading to 1,000 feet, in case | " 19.00 |
| 8219 | Biram's Anemometer, 4 in., 4 dials reading to 100,000 feet, in case | " 21.00 |
| 8221 | Biram's Anemometer, 6 inches, 2 dials reading to 1,000 feet, in case | " 21.00 |
| 8223 | Biram's Anemometer, 6 in., 4 dials reading to 100,000 feet, in case | " 27.00 |
| 8225 | Biram's Anemometer, 6 in., 6 dials reading to 10,000,000 ft., in case | " 33.00 |



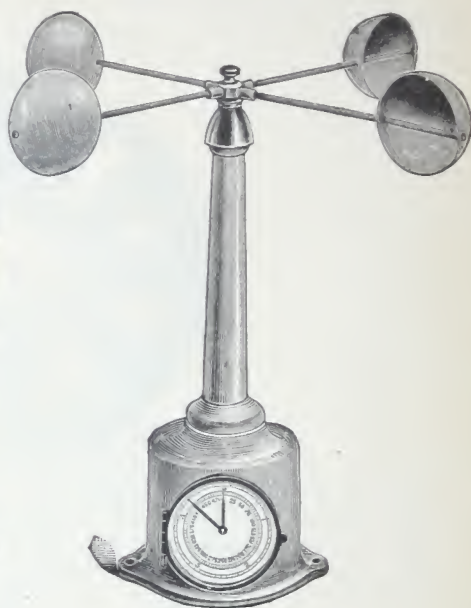
- | | | |
|------|--|---------------|
| 8230 | Biram's Anemometer, pocket size, 2 inches, 2 dials reading to 1,000 feet, in case..... | each, \$30.00 |
| | Leather sling cases, for any of the above..... | " 3.00 |



Anemometers — Continued.



8235-8237



8240

Portable Anemometer, or Air Meter.

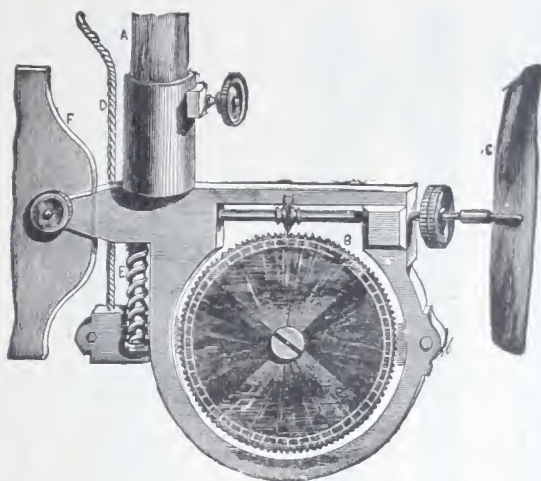
- 8235 Portable Air Meter, 4 dials reading to 100,000 feet, with disconnecter,
in mahogany case.....each, \$21.75
- 8237 Same as No. 8235, 6 dials reading to 10,000,000 feet " 21.75

Robinson's Improved Anemometer.

The improvement consists, firstly, in a rearrangement of the works, which admits of the column carrying the arms and cups rising from the center of the base, and, secondly, an arrangement by which the enumeration is effected by two hands which can be set at zero on the commencement of an observation, thus obviating the necessity of taking a reading of the dials before proceeding to make a fresh observation. A further improvement is the recent introduction of ball-bearings to the central shaft, by which friction is reduced to a minimum and the wearing of the instrument prevented.

- 8240 Robinson's Improved Anemometer, with 3 inch cups, reading to 500
miles by $\frac{1}{16}$ of a mile, complete.....each, \$30.00

The Portable Current Meter.



This instrument is constructed and used for the measurement of *rate* or *flow* of small rivers and streams, also for the flow of *tides*.

For this purpose the meter should be placed in the stream, as per directions supplied, and allowed to run for a given time. The rate of the stream per unit time is then shown by reference to the graduations of the circles which are actuated by the force of the water upon the Fan-screw. The value of the graduation is as follows:

1. The inner circle, graduated to show *8 miles* in a revolution.
2. Each mile, subdivided into 8 parts, showing *furlongs*.
3. Each furlong graduation, subdivided into 3 parts, equal to 220 feet each.
4. The outer circle, graduated to show *single feet*, and a complete revolution 220 feet.

The circles *B* are attached to a movable arm, which throws the endless screw in or out of gear. This arm can be raised by turning the screw which passes through the coil spring *E*, which would fix the gearing for constant use. It can also be raised by pulling the cord *D* after the meter is submerged in the stream at the instant of a given time, and also released at the expiration of the given time.

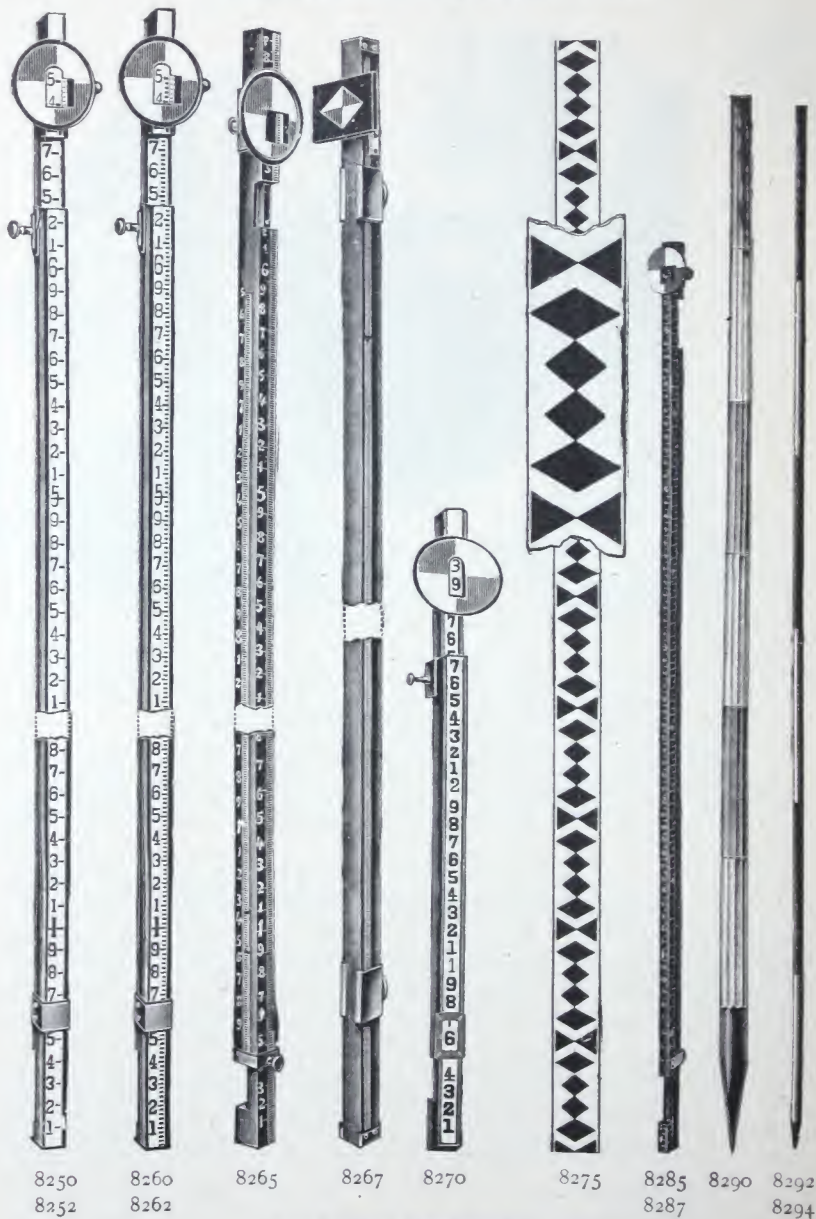
The meter can also be used for determining the *quantity* of water flowing from a reservoir or tank.

For this purpose, it is necessary to know accurately the area of the channel or tube through which the water is passing and the meter to be placed within it. Then the volume of water passing per minute is shown in cubical feet by multiplying or dividing (according to area of tube) the area of the tube by the rate per minute as shown by the meter.

8245 Portable Current Meter, complete, in mahogany case.....each, \$55.00



Leveling Rods and Ranging Poles.



For description see page 207.



Leveling Rods and Ranging Poles.

- 8250 **Light Philadelphia Rod**, with Target, Vernier and Clamp, $6\frac{1}{2}$ feet long, sliding out to 12 feet. Divided into feet and tenths, with vernier reading to hundredths.....each, \$13.00
- 8252 **Heavy Philadelphia Rod**, with Target, Vernier and Clamp, 7 feet long, sliding out to 13 feet. Divided into feet and tenths, with vernier reading to hundredths..... " 15.00
- 8260 **Light Philadelphia Rod**, with Target, Vernier and Clamp, $6\frac{1}{2}$ feet long, sliding out to 12 feet. Divided into feet, tenths and hundredths, with vernier reading to thousandths..... " 13.00
- 8262 **Heavy Philadelphia Rod**, with Target, Vernier and Clamp 7 feet long, sliding out to 13 feet. Divided into feet, tenths and hundredths, with vernier reading to thousandths..... " 15.00
- 8265 **New York Rod**, with Target, Vernier and Clamp, $6\frac{1}{2}$ feet long, sliding out to 12 feet. Divided into feet, tenths and hundredths, with vernier reading to thousandths..... " 14.00
- 8267 **Boston Rod**, Mahogany, Clamp, Target, vernier at both ends. Divisions are engine divided on the boxwood inlaid on the mahogany stock, $6\frac{1}{2}$ feet long, sliding out to 11 feet..... " 14.00
- 8270 **Mining Rod**, with Target, Vernier and Clamp. 3 feet long, sliding out to 5 feet. Divided into feet and tenths, with vernier reading to hundredths..... " 12.00
- 8272 **Mining Rod**, same as 8270, 5 feet long, sliding out to 9 feet..... " 12.75
- 8275 **Stadia Rod**, 6 feet long, opening to 12 feet, with strong hinge " 12.00

Metric Rods.

- 8280 **Metric Rod**, similar to 8250, 2 meters long, sliding out to 3.7 meterseach, \$13.00
- 8282 **Metric Rod**, similar to 8252, 2.2 meters long, sliding out to 4 meters " 15.00

Architects' Rods.

- 8285 **Architect's Rod**, with Target, Vernier and Clamp, 5 feet long, sliding out to 10 feet. Divided into feet, inches and eighths, with vernier reading to sixty-fourths.....each, \$6.00
- 8287 **Architect's Rod**, same as 8285, divided into feet, tenths and hundredths, with vernier reading to thousandths..... " 6.00

Ranging or Flag Poles.

- 8290 **Ranging Poles**, of best seasoned wood, octagonal, tapered, painted red and white, alternately every foot:
- | | | | |
|-----------|--------|------|--------------|
| | 6 | 8 | 10 feet long |
| Each..... | \$2.00 | 2.25 | 2.50 |
- 8292 **Ranging Poles, Tubular Iron**, $\frac{7}{8}$ in. diameter, painted red and white, alternately every foot:
- | | | | |
|-----------|--------|------|--------------|
| | 6 | 8 | 10 feet long |
| Each..... | \$2.75 | 3.00 | 3.50 |
- 8294 **Ranging Poles, Solid Steel**, octagonal, $\frac{1}{2}$ in. diameter, painted red and white alternately every foot. The points are hardened and drawn out of the solid steel:
- | | | |
|-----------|--------|-------------|
| | 6 | 8 feet long |
| Each..... | \$2.75 | 3.00 |

Continued on next page.



Sectional Ranging Poles.

- 8300 Sectional Ranging Poles, of best seasoned wood, in two sections, for convenience in carrying, painted red and white alternately every foot 8 10 feet long
Each..... \$3.00 3.50

Flexible Leveling Rods.



Made of strips of prepared canvas about three inches wide, and divided the same as self-reading rods. Can be rolled up and carried in the pocket. For use they are tacked to any convenient strip of wood.

- 8305 Flexible Leveling Rod, 10 feet, divided feet, tenths and hundredths, each, \$3.25
8306 Flexible Leveling Rod, 12 " " " " " " " 4.00
8307 Flexible Leveling Rod, 12 " " " inches and eighths.... " 4.00
8308 Flexible Leveling Rod, $3\frac{1}{2}$ meters, divided to centimeters..... " 4.00

Arrows or Marking Pins.



- 8320 Steel Arrows, extra quality, heavy, hardened points which will not bend, WG 6, 10 inches long:
per 100.....\$9.00 per 50.....\$5.00 per set of 11.....\$1.25
8322 Steel Arrows, same as No. 8320, 14 inches long:
Per 100.....\$10.00 per 50.....\$6.00 per set of 11.....\$1.50
8324 Steel Arrows, medium. WG 9, 11 in set:
14 in. 12 in. 10 inches long
Per set.....\$1.00 .90 .80
8326 Iron Arrows, WG 9, 11 in set, 14 inches long.....per set, \$.60

Brass Plumb Bobs.



- 8330 Brass Plumb Bobs, long necks, hardened steel points and screw caps :
- | | | | | | | | | | | |
|----------|------|------|------|------|------|------|------|------|------|--------|
| | 4 | 8 | 12 | 14 | 16 | 18 | 24 | 32 | 48 | 80 oz. |
| Each, \$ | 1.25 | 1.60 | 2.00 | 2.25 | 2.50 | 2.75 | 3.25 | 3.75 | 5.00 | 8.50 |
- 8332 Adjustable Brass Plumb Bob, about 10 oz., with concealed reel.....each, \$2.50
- 8334 Plain Brass Plumb Bobs, with steel points :
- Each.....8 oz., \$.75 12 oz., \$1.20
- 8340 Plumb Bob Sheath, of sole leather, for carrying 14 oz. plumb bob (or smaller size), with loop for attaching to belt.....each, \$.70
- 8341 Same as 8340, for 16 and 18 oz. bobs..... " .85

Mercury Plumb Bobs.

- 8350 Mercury Plumb Bob, $3\frac{1}{2}$ oz., 4 in. long, $\frac{1}{2}$ in. diameter.....each, \$1.00
- 8352 Mercury Plumb Bob, 6 oz., $4\frac{1}{2}$ in. long, $\frac{5}{8}$ in. diameter..... " 1.50
- 8354 Mercury Plumb Bob, 12 oz., $5\frac{3}{8}$ in. long, $\frac{7}{8}$ in. diameter..... " 2.00
- 8356 Mercury Plumb Bob, 16 oz., 6 in. long, 1 in. diameter..... " 2.50

Plumb Bob Cord.

- 8360 Plumb Bob Cord, best braided linen, per skein of 25 yards..... \$.40
- 8362 Plumb Bob Cord, braided silk, per skein of 25 yards..... 1.25

Plumb Bob Adjuster.

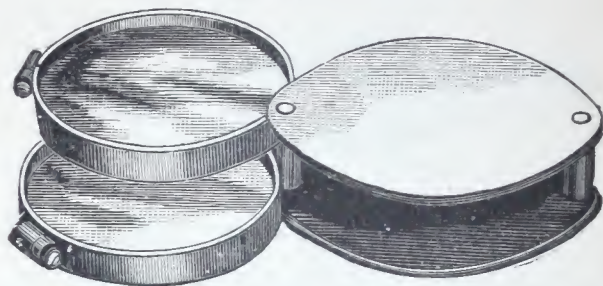


- 8365 Plumb Bob Adjuster, brass, with directions... ..each, \$.35

This convenient little tool is intended to overcome the difficulties generally found in adjusting the length of the cord which holds the plumb bob. Can be attached to any transit or level. The weight of the bob holds same in place at any desired distance. No tying of knots necessary.

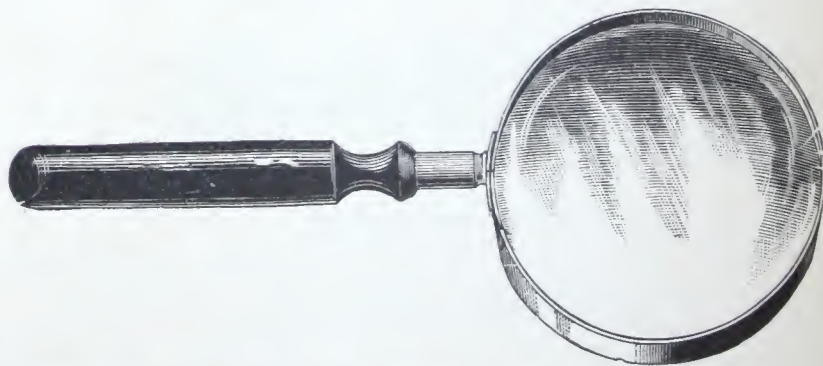


Pocket Magnifying Glasses.



8370 Pocket Magnifying Glasses, **High Power**, for reading verniers on surveying instruments. In **White Celluloid Cases**, which have the advantage of being easily found when dropped in bushes or grass:

	$\frac{3}{4}$ inch diameter.....each,	\$.60		1 inch diameter.....each,	\$.70
8372	Single Lens, metal case.	I	$1\frac{1}{4}$	$1\frac{3}{8}$ in. diameter	
	Each.....	\$.35	.50	.60	
8374	Double Lens, metal case.....	.50	.65	.75	
8376	Single Lens, rubber case,	$\frac{3}{4}$ I	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$ 2 in. diameter
	Each.....	\$.30	.40	.60	.75 1.00 1.25
8378	Double Lens, Rubber case,	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{7}{8}$ & I	$1\frac{1}{8}$ & $1\frac{1}{4}$	$1\frac{1}{2}$ & $1\frac{3}{4}$ in. dia.
	Each.....	\$.60	.80	1.00	1.75

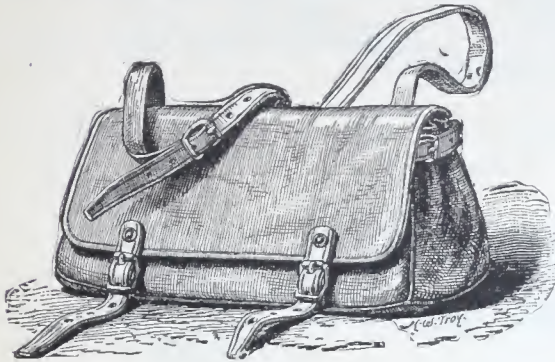


8380 Reading Glasses, best quality, nickel plated frames, polished handles:

	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$ in. diameter
Each....	\$.70	1.00	1.10	1.60	2.00	2.70
8382	Reducing Glasses, for reducing,	$2\frac{1}{2}$	$2\frac{3}{4}$	3 in. diameter		
	Each.....	\$ 1.00	1.25	1.50		

Surveyors' Bags.

For carrying Field Utensils, such as Field Books, Tapes, Plumb Bobs, Hatchets, etc.



8400



8402

- | | | |
|------|--|--------------|
| 8400 | Surveyors' Bag, fine quality and very durable: made of Solid Russet Leather, carefully sewed, with shoulder strap, 17½ in. long, 7½ in. wide, 8 in. high..... | each, \$4.20 |
| 8402 | Surveyors' Bag, made of Heavy White Cotton Duck with Grain Leather base. Hand made frame and heavy strap handles. Designed for heavy service, 14 in. long..... | " 3.40 |
| 8404 | Field Book Bag, made of Heavy Russet Leather, carefully sewed, for carrying field books, etc., 8 x 10 in., with shoulder strap..... | " 2.50 |

Surveyors' Bush Knife or Machete.



- | | | |
|------|--|--------------|
| 8410 | Surveyors' Bush Knife, leather handle, blade 17 inches long..... | each, \$1.25 |
| 8415 | Surveyors' Bush Knife, leather handle, blade 22 inches long..... | " 1.50 |
| 8417 | Sole Leather Sheath, for 8410 or 8415..... | " .95 |

Surveyors' Bush Hook.



- | | | |
|------|--|--------------|
| 8420 | Surveyors' Bush Hook, best quality, long handle..... | each, \$1.50 |
|------|--|--------------|



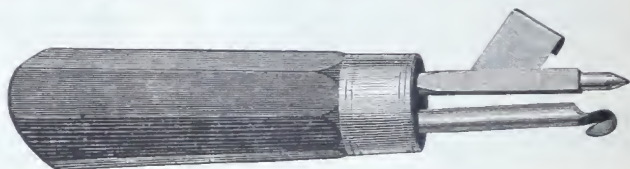
Engineers' and Surveyors' Stake Tacks.



This ingenious little arrangement is simply a galvanized tack with an indenture in head to assist in setting the plumb bob quickly and accurately:

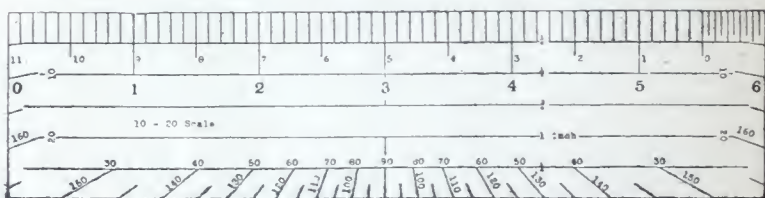
8425 Stake Tacks

	Per 2 oz. box	3 lb. box	5 lb. box	10 lb. box
Each.....	\$.15	1.30	2.00	3.75



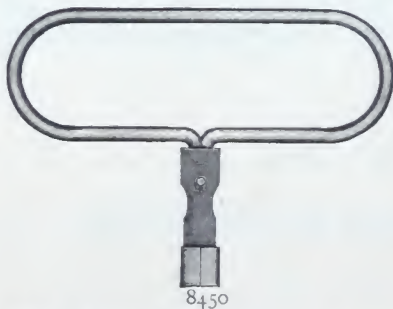
8430 Timber Scribes or Tree Markers:

Each.....	small, \$1.00	large, \$1.25
-----------	---------------	---------------



- 8440 Field Book Ruler, transparent and flexible, length 6 inches, designed expressly for Civil Engineers and Architects, for the purpose of recording field notes and for use in drafting room.....per dozen, \$2.25 each, \$.20

Detachable Rings for Tapes.

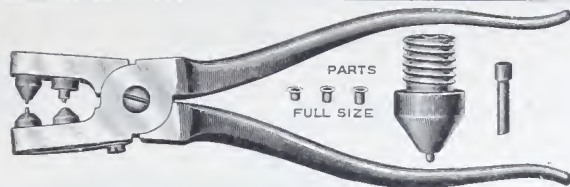


8450

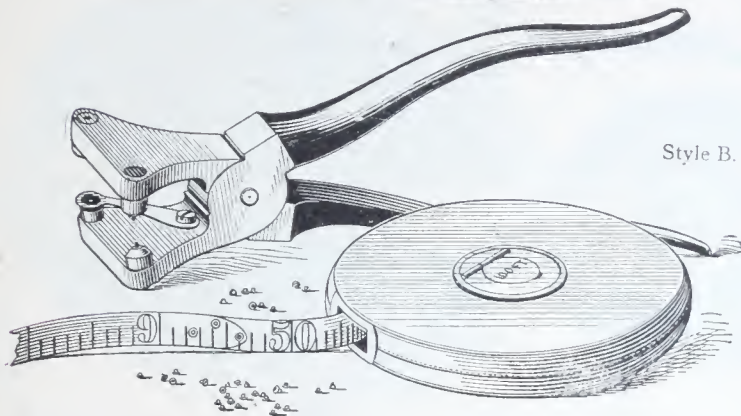


8452

- 8450 Detachable Rings, large, 3 in. oval, per pair.....\$1.00
8452 Detachable Rings, small, 1 in. oval, per pair......50



Style A.



Style B.

- 8460 Repair Outfit, for mending steel tapes, including 1,000 eyelets, style A or style Beach, \$5.00
8462 Extra eyelets for above, per 1,000..... 1.50

The above cut shows the new "Punch and Set" combined, for repairing steel tapes. It cuts a clean hole through two thicknesses of a steel tape, one sixteenth of an inch in diameter, without drawing the temper. There is absolutely no filing required by this method except to round off the rough corners of the break. Place the tape under a small steel spring, on the rubber, and it is held in place for punching. After cutting first hole, place an eyelet on the pivot for it, and insert in the hole cut, and it is riveted as quickly as the hole was cut. The first rivet or eyelet holds tape in position for cutting or riveting the rest. Five minutes is average time to make a good repair. The holes can be cut extremely near the ends or edges of repair **without any danger of splitting the tape**, thus avoiding any chance of dirt collecting under the splice, or cutting the fingers when drawing the tape through the hands, or catching in rags, etc., when cleaning.

The tool is small, light, durable and cheap. It can be carried in instrument box, thus a corps having it with them can repair broken tapes with loss of but a few minutes at any time. The cut shows tool, tape and a four-minutes repair in latter. They are in use and recommended by various railroad companies, city engineers, etc.

Little Giant Tape Splice.

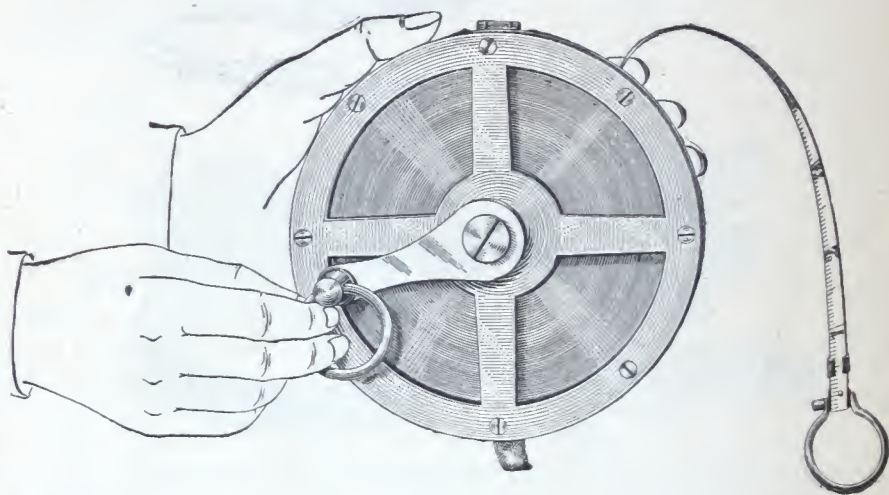


An exceedingly useful device for making temporary repairs of broken tapes, thereby saving delay in the work. When a tape breaks, the broken ends are inserted into the splice, adjusted by the sight hole, and by turning down screws with a knife blade, tape is ready for use. Will not catch on obstructions and holds against strongest pull.

- 8470 Little Giant Tape Splice, to fit $\frac{1}{8}$ in. or $\frac{3}{16}$ in tapes...3 for \$1.00 each, \$.35
8472 Little Giant Tape Splice, to fit $\frac{1}{8}$ in. Tapes.....3 for 1.00 " .35



Eckel Tape Reel.



Eckel Tape Reel, named after F. Eckel (our predecessor in the manufacture of Surveying Instruments) who originally designed and manufactured this reel.

Made of Brass, Nickel Plated, with Leather Strap. Very Strong and very Durable.

8475 Eckel Reel, complete, with steel tape, $3/16$ inch wide, 10ths or 12ths, graduations begin at extreme end of tape :

	50 feet	100 feet
Each.....	\$10.50	\$14.50

8477 Eckel Reel, complete, with steel tape, $1/4$ inch wide, 10ths or 12ths, graduations begin at extreme end of tape :

	50 feet	100 feet
Each.....	\$10.50	\$14.50

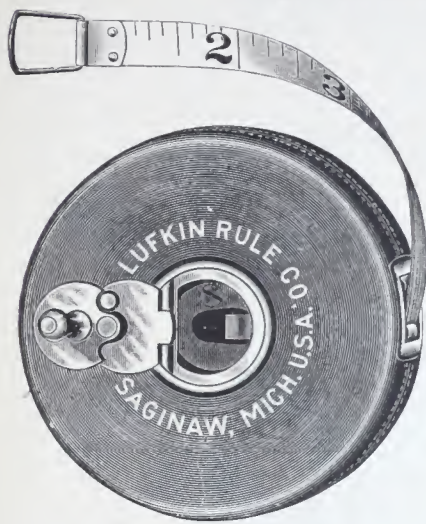
In ordering, please state whether 10ths or 12ths are desired.

8485 Eckel Reel only, to fit 50 foot steel tape of any standard width....each, \$6.50

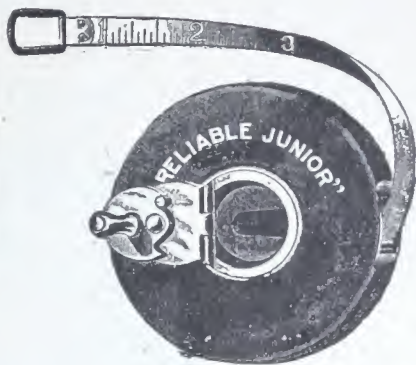
8487 Eckel Reel only, to fit 100 foot steel tape of any standard width... " 7.00

In ordering reels Nos. 8485 and 8487, please state width of tape for which reel is desired.

Steel Measuring Tapes.



8500-8506



8510

"Reliable" Steel Measuring Tapes, with double folding flush handle, opened by pressing small pin or button on opposite side. Hard leather cases. Nickel plated trimmings. U. S. Standard, graduations begin at outside end of ring:

8500 "Reliable" Steel Measuring Tape, 3/8 inch wide:							
	33	50	66	75	100	150	200 feet long
Each...	\$5.20	7.20	9.20	10.40	12.80	18.50	24.00
8502 "Reliable" Steel Measuring Tape, 1/2 inch wide:							
	33	50	66	75	100	150	200 feet long
Each...	\$5.85	8.10	10.35	11.70	14.40	21.00	27.00
8504 "Reliable" Steel Measuring Tape, 5/8 inch wide:							
	33	50	66	75	100	150	200 feet long
Each.....	\$6.60	9.10	11.65	13.20	16.20		
8506 "Reliable" Steel Measuring Tape, 3/4 inch wide:							
	33	50	66	75	100	150	200 feet long
Each.....	\$7.40	10.20	13.10	14.85	18.20		

In ordering, please state whether 10ths or 12ths are desired. Tapes marked metric measure one side only, same price as corresponding length in feet.

- 8510 "Reliable Junior" Steel Measuring Tape, 1/4 inch wide, with double folding flush handle opened by pressing small pin or button on opposite side. Hard leather cases. Nickel plated trimmings. U. S. Standard, graduations begin at outside end of ring:
- | | |
|--|--------|
| 25 feet, diameter of case 2 1/4 in., weight 3 oz. complete, marked 10ths or 12ths, | |
| Each..... | \$3.75 |
| 50 feet, diameter of case 2 3/4 in., weight 5 oz. complete, marked 10ths or 12ths, | |
| Each..... | \$4.50 |

In ordering, please state whether 10ths or 12ths are desired.



Steel Measuring Tapes
in
Leather Cases.



8520 "Engineers' Pattern" Steel Tapes, 1/4 inch, heavy steel, hard leather steel lined cases, nickel plated trimmings, two detachable rings. The tape can be readily detached from the case. U. S. Standard, graduations begin at extreme end of tape. 10ths or 12ths.

	33	50	66	75	100 feet long
Each.....	\$5.00	6.00	8.00	9.50	12.00

Metric, marked one side only in meters and centimeters. The first 10 centimeters to millimeters:

	10	15	20	25	30 meters long
Each.....	\$5.00	6.00	8.00	10.25	12.00

8525 "Engineers' Pattern" Steel Tapes, 3/16 inch steel. Hard leather cases:

	33	50	66	75	100 feet long
Each.....	\$5.00	6.00	8.00	9.50	12.00

In ordering, please state whether 10ths or 12ths are desired.

Steel Measuring Tapes

in

Steel Cases.



- 8530 Engineers' Pattern Steel Tapes, 1 4 inch heavy steel, steel cases nicely enameled in black and bound with nickel plated brass. Two detachable handles. The tape can readily be detached from the case. U. S. Standard, graduations begin at extreme end of tape. 10ths or 12ths.

	33	50	66	75	100 feet long
Each.....	\$4.25	5.25	7.00	8.75	10.50

Metric, marked one side only in meters and centimeters. The first 10 centimeters to millimeters :

	10	15	20	25	30 meters long
Each.....	\$4.25	5.25	7.00	9.50	10.50

- 8535 Engineers' Pattern Steel Tapes, 3 16 inch steel, steel cases bound with nickel plated brass :

	33	50	66	75	100 feet long
Each.....	\$4.25	5.25	7.00	8.75	10.50

In ordering, please state whether 10ths or 12ths are desired.

Steel Measuring Tapes—Continued.



- 8540 Paine's Patent Steel Tapes, 1/4 inch heavy steel. Steel lined cases covered with russet leather. All trimmings nickel plated. Two finger rings with each tape. U. S. Standard, graduations begin at extreme end of tape. 10ths or 12ths:

	33	50	66	75	100 feet long
Each....	\$5.50	8.00	10.00	12.00	15.00
English and meters, each....	6.50		12.00		18.00

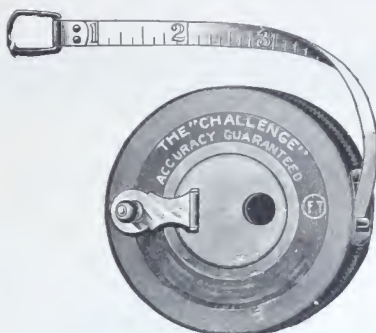


- 8545 Paine's Patent Steel Tapes, 1/4 inch heavy steel. Contained in steel cases covered with morocco and brass bound. Brass flush handles. Two finger rings with each tape. U. S. Standard, graduations begin at extreme end of tape. 10ths or 12ths:

	33	50	66	75	100 feet long
Each	\$4.50	6.00	8.00	10.00	12.00
English and meters, each....	5.50		10.00		15.00

In ordering, please state whether 10ths, 12ths or metric are desired.

Steel Measuring Tapes—Continued.

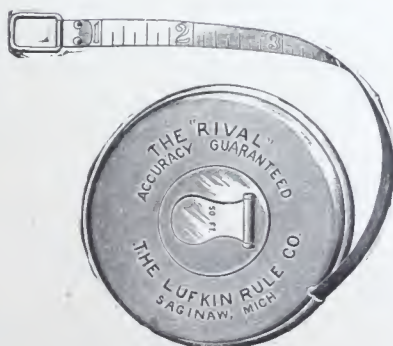


8550 "Challenge" Steel Measuring Tapes, 3 8 inch steel. Hard leather cases, nickel plated trimmings. U. S. Standard, graduations begin at outer end of ring, 10ths or 12ths:

	25	33	50	66	75	100 feet long
Each.....	\$3.25	3.50	4.00	5.00	5.25	6.75

Metric, meters and centimeters on one side only. First 10 centimeters in millimeters:

	10	15	20	25	30 meters long
Each.....	\$3.50	4.00	5.00	6.00	6.75



8555 "Rival" Steel Measuring Tapes, 3 8 inch steel. Nickel plated steel cases, flush handles. U. S. Standard, graduations begin at outer end of ring. 10ths or 12ths:

	25	33	50	66	75	100 feet long
Each.....	\$2.75	3.00	3.40	4.25	4.50	5.75

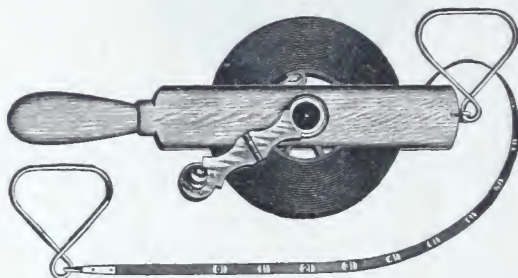
In ordering, please state whether 10ths, 12ths or metric are desired.



Surveyors' Tape Chains.



Method of Graduating.



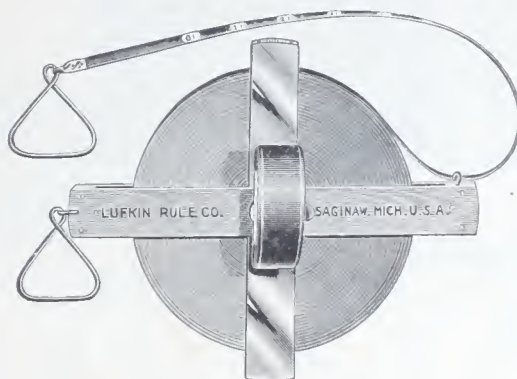
8560 Surveyors' Tape Chains, 1/4 inch wide, Heavy Steel, graduated every foot and end feet in one-tenths. Where the tape is graduated, the steel has a bright raised surface with the figures etched in. As the steel is of the finest quality and well tempered, the graduations and figures will not wear off, but will always be clear and distinct. Furnished in hardwood reel with large metal folding handle and two large detachable rings. Trimmings nicely nickel plated. The frame and winding apparatus is strong, durable and compact. Tape is detachable. When tape is not in use the handles are fastened to the frame, where they will not get lost, and at the same time serve as a convenient handle for carrying the complete tape.

	100	150	200 Feet	
Tapes, complete with reel.....	\$6.00	7.50	9.00	
Tapes only, with rings.....	4.00	5.50	7.00	
	25	30	50	100 Meters
Tapes, complete with reel.....	\$5.75	6.50	9.50	17.00
Tapes only, with rings.....	3.75	4.50	7.50	15.00

Metric Tapes are graduated on one side only, the first decimeter in millimeters, balance of first meter in centimeters, balance of tape in decimeters.

Reel, only.....\$2.00 Rings, only.....per pair, \$.50

Surveyors' Tape Chains—Continued.



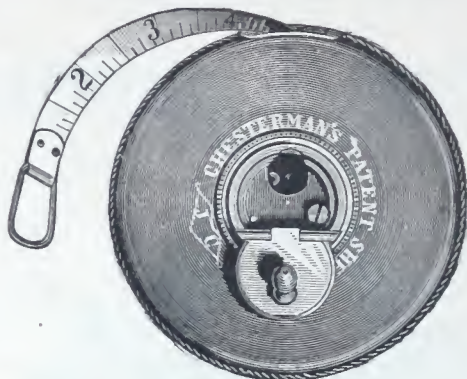
REEL FOLDED.

8565 Surveyors' Tape Chains, as described on page 220. The reel has steel cross-arms, which keep the tape in place when winding or unwinding. When tape is in use and removed from the reel, the metal cross-arms of the reel fold into the wooden frame, so that even the large sizes can be conveniently carried in the pocket. The reel can be held firmly by running the hand through the strong leather loop fastened to the side of same. These reels are especially desirable for the larger tapes.

	100	150	200	300	500 Feet
Tapes complete, with reel.....	\$7.50	9.00	10.50	14.00	21.50
Tapes only, with rings.....	4.00	5.50	7.00	10.50	18.00
	25	30	50	100 Meters	
Tapes complete, with reel.....	\$7.25	8.00	11.00	18.50	
Tapes only, with rings..	3.75	4.50	7.50	15.00	
Reel only.....	\$3.50	Rings only.....per pair, \$.50			

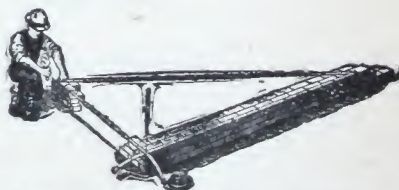
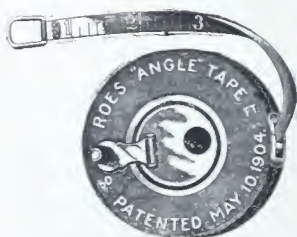


Steel Measuring Tapes—Continued.



- 8570 Chesterman's Steel Measuring Tapes, $\frac{3}{8}$ inch steel. Red leather case with flush handles. Graduations begin at outer end of ring. 10ths or 12ths:

	25	33	50	66	75	100 feet long
Each.....	\$4.50	5.25	7.20	9.20	10.40	12.80



Mason Squaring foundation with "Roe's Patent Angle Tape".

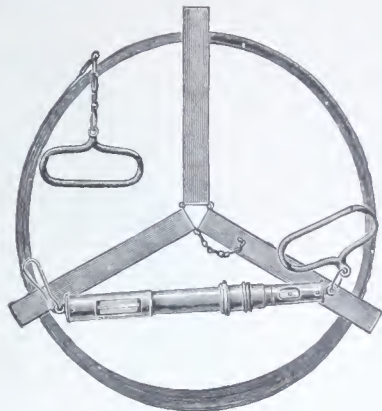
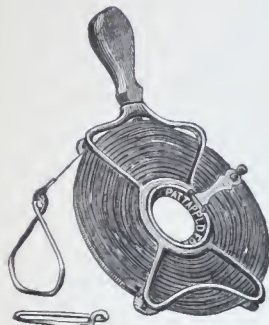
- 8575 Roe's Patent Angle Steel Measuring Tapes, $\frac{3}{8}$ inch steel. Hard leather case with nickel plated trimmings. 10ths or 12ths:

	25	50	75	100 feet long
Each.....	\$3.25	4.00	5.25	6.75

In ordering, please state whether 10ths or 12ths are desired.

This tape can be used for all kinds of measurements and also for laying out right angles much quicker than by any other method and equally accurate. Its principle is the old trigonometrical formula that 6, 8 and 10 ft. sides of a triangle secure a right angle. This form is embodied in the tape, by providing it at the 1, 9, 19 and 25 ft. marks with eyelets, the 9 and 19 ft. marks also with joints. To use the tape, fasten it at the starting point with a small marking pin or nail through the eyelet at figure 1 on tape; then fasten it at figure 9 as shown in illustration; place the 25 ft. mark over the starting point and taking hold of the tape at the 19 ft. mark, pull it straight as shown in cut. You will then have a perfect right angle at the starting point. The advantages of this tape are obvious. A perfect right angle is obtained in a few minutes.

Measuring Chains.



8580 Roe's Steel Tape Chains, $\frac{3}{8}$ in. wide, on metal reel:

	50	100	200	300	500 feet
Plain.....	\$4.00	5.00	7.50	8.00	12.00
Nickel Plated.....	5.00	6.00	9.00	10.00	15.00
Aluminum Plated.....	5.50	7.00	10.50	12.00	18.00
Tapes 50, 100 and 200 feet long, graduated every foot. End foot in tenths.					
Tapes 300 and 500 feet long, graduated every five feet. End foot in tenths.					
Reels only, for 50 and 100 foot tapes.....each,					\$1.50

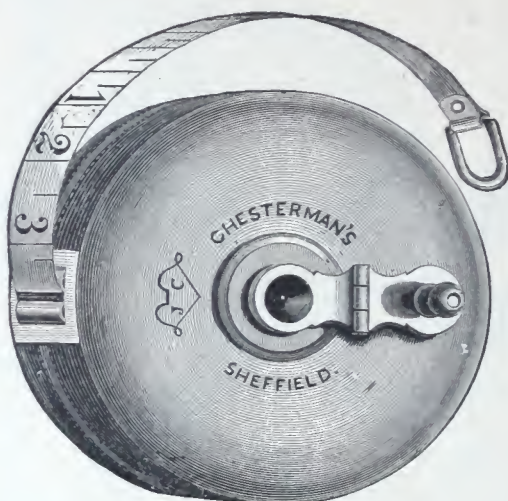
8585 Spring Balance Tape, $\frac{3}{8}$ in. steel, 50 feet long, adjustable for temperature, with spring balance, thermometer and spirit level attachment.... 18.00



8590 Measuring Chains, Iron:	33	50	66	100 feet
Each.....	\$2.50	3.50	4.25	5.50
8592 Measuring Chains, Steel, best grade, brazed links and rings.....	5.50	6.00	10.00	11.00



Metallic Tapes.



8600 Chesterman's Metallic Tapes, 5/8 in. wide, of best woven linen, with metallic warp, folding handle, in leather case. Marked 10ths or 12ths:

	25	33	50	66	75	100 feet long
Each.....	\$1.80	2.10	2.60	3.00	3.30	4.20

Domestic Metallic Tapes.

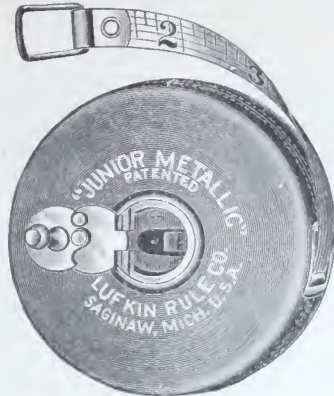
8605 Domestic Metallic Tapes, 5/8 in. wide. Made of best woven linen and contain metal threads to prevent stretching, are nicely finished and re-enforced on the first end with leather to prevent breaking, are as near waterproof as possible. Cases of hard leather, brass folding handles and brass trimmings. Marked 10ths or 12ths.

	25	33	50	66	75	100 feet long
Complete, each....	\$1.70	2.00	2.50	2.80	3.10	3.90
8610 Tapes only, each...	.80	1.00	1.40	1.60	1.80	2.60

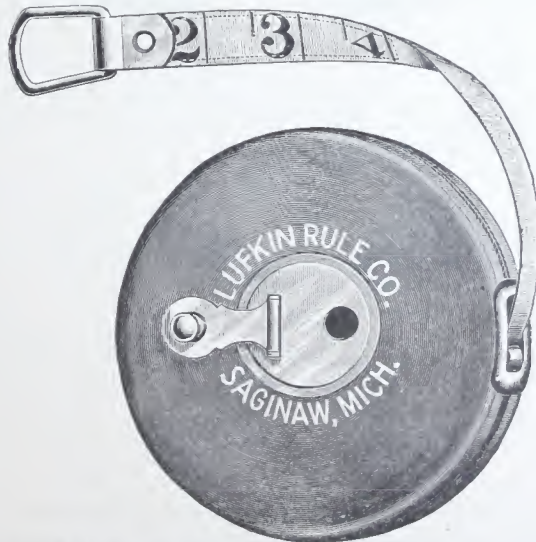
8615 Marked in meters and centimeters, complete in case:

	10 meters=33 feet	15 m=50 ft.	20 m=66 ft.	30 m=100 ft.
Each.....	\$2.00	2.50	2.80	3.90

In ordering, please state whether 10ths or 12ths are desired.



- "Junior" Metallic Measuring Tapes**, $\frac{3}{8}$ in. wide, with patent double folding flush handle opened by pressing pin on opposite side. Tape is made of best woven linen with metallic warp, hard leather cases, nickel plated trimmings. Marked 10ths or 12ths.
- | | | |
|------|---|--------------|
| 8625 | 25 feet long, diameter of case $2\frac{3}{4}$ in..... | each, \$1.80 |
| 8626 | 33 feet long, diameter of case 3 in..... | " 2.00 |
| 8627 | 50 feet long, diameter of case $3\frac{1}{2}$ in..... | " 2.25 |



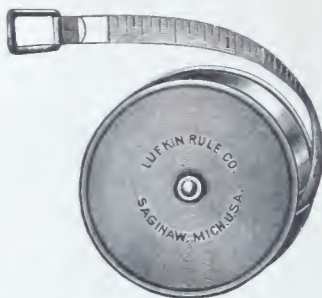
- 8640 Sterling Linen Measuring Tapes**, $\frac{9}{16}$ inch wide, made of pure linen, heavily coated and re-enforced with leather at beginning of tape. Hard leather case, flush handle, all trimmings nickel plated. Marked 10ths or 12ths:
- | | | | |
|-----------|---------------------|---------------------|--------------------|
| Each..... | 25 ft. long, \$1.25 | 50 ft. long, \$1.65 | 100 ft. long, 2.50 |
|-----------|---------------------|---------------------|--------------------|
- In ordering, please state whether 10ths or 12ths are desired.

Architects' Tapes.

- 8650 Architects' Tape**, 8 feet long.....each, \$1.25
- Linen Tape, $\frac{3}{8}$ in. wide, nickel plated cases, spring wind and center stop. Printed feet and inches one side, quarter inch scale on the other. Useful in measuring plans.



Pocket Steel Tapes.



- 8660 Pocket Steel Tapes**, German Silver cases, spring wind, with center stop, graduated to inches and 16ths on one side, and feet, tenths and hundredths on the other. Sizes, 3, 6 and 8 feet, $\frac{1}{4}$ inch wide, larger sizes $\frac{5}{16}$ inch wide.

	3	6	8	10	12	18 feet long
Each.....\$	.80	1.25	1.75	2.35	2.65	3.50

- 8665 Pocket Steel Tapes**, nickel plated cases, spring wind, center stop, graduated on one side only to inches and 16ths.

	36	60	72	96 inches long
Each.....\$	.60	.75	.85	1.20

- 8670 Pocket Steel Tapes**, nickel plated cases, spring wind, center stop, graduated inches and 16ths on one side, millimeters on the other.

	36	60	72	96 inches long
	(1 meter)	(1½ meters)	(2 meters)	(2½ meters)
Each.....\$	.75	.85	1.00	1.40

Diameter Tapes.

- 8675 Diameter Tapes**, $\frac{3}{8}$ inch wide, nickel plated cases, folding handle. These tapes are marked on one side in consecutive inches, other side with diameter graduations, enabling one, by measuring the circumference, to arrive at the exact diameter as fine as $\frac{64}{1000}$ ths of an inch, of circular objects, such as pulleys, shafting, piping, columns, etc.:

	8	12	15	20 feet long
Each.....\$	1.50	1.80	2.10	2.50

Prism Binoculars.



Prism Binocular, for field and marine use. A case of stout leather, velvet lined, is furnished with each glass. Besides the outside carrying strap there is also an adjustable strap attached to the glass itself. The adjustment for focus is similar to the ordinary opera glass. The right eye-piece has a separate adjustment to provide for any difference in the observer's eyes. The simplest way to adjust the Binocular is to close the right eye and focus on some distant, sharply defined object, using the left eye only. If the right eye is not in focus, the eyes are of unequal strength. This can be corrected by adjusting the right eye-piece until the vision is the same as the left. For normal eyes the right eye-piece should be set at zero. The adjustment for eye-distance is made by simply bending the hinged cross bars while looking at the sky or some distant object. When correctly found, the two fields will blend into one, with a round, clearly defined margin. If incorrectly adjusted the field will be seen in two separate rings. The washer on the upper bar above the hinge is engraved to indicate the pupillary distance in millimeters. When the glass has been properly adjusted for focus and eye-distance, it may be left in this position without changing the adjustment in any particular, as the case holds the glass in any position. Cleaning the lenses is best done with a silk handkerchief.

The arrangement of the prisms is so simple that any person with ordinary care may with the aid of a screw driver take them out and clean them without fear of displacement or damage. The body and cross bars are made of one piece and the tubes containing the glasses are stationary, the hoods containing the eye-pieces sliding up and down. These features insure absolute and permanent alignment of the optical axis. No cement is employed except in the object lens.

- | | | |
|------|--|---------|
| 8800 | Prism Binocular, six power, magnifies 6 times. At 1,000 yards the field of view is 125 yards. Weight 14 oz. without case. Complete with case.....each, | \$45.00 |
| 8805 | Prism Binocular, nine power, magnifies 9 times. At 1,000 yards the field of view is 80 yards. Weight 16 oz. without case. Complete with case..... | “ 45.00 |



Field and Marine Glasses.



8820-8822



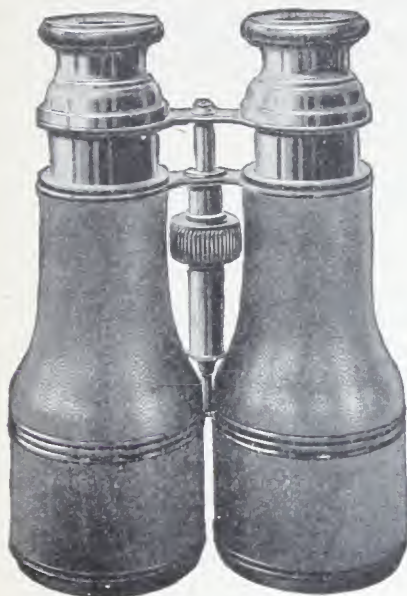
8825

- 8820 Field and Marine Glass, black morocco, japanned, object glasses 2 in., magnifies four times, with cord, in sole leather case.....each, \$15.00
- 8822 Field and Marine Glass, same as above, but aluminum japanned, polished tubes..... " 21.00
- 8825 Field and Marine Glass, aluminum all polished, object glasses 2 in., magnifies four times, with cord, in tan sole-leather case..... " 23.50



- 8830 Field and Marine Glass, black morocco japanned, oxidized cross bars, adjustable to pupillary distance, 10 lenses, object glasses 1 3/4 in., magnifies five times, in sole-leather case.....each, \$14.50

Field and Marine Glasses—Continued.



8835-8842



8850-8860

- | | | |
|------|--|---------------|
| 8835 | Field and Marine Glass, black morocco, japanned, object glasses $1\frac{3}{4}$ in., magnifies five times, in case, with shoulder strap..... | each, \$11.25 |
| 8837 | Field and Marine Glass, same as 8835. Object glasses 2 in..... | 12.00 |
| 8840 | Field and Marine Glass, black morocco, aluminum all-polished, object glasses $1\frac{3}{4}$ in., magnifies five times, in case, with shoulder strap..... | 16.00 |
| 8842 | Field and Marine Glass, same as 8840. Object glasses 2 in. | 17.00 |
| 8850 | Field and Marine Glass, black morocco, japanned, object glasses 2 in., large eye-pieces, magnifies five times, in case, with shoulder strap..... | 12.00 |
| 8855 | Field and Marine Glass, black morocco, aluminum japanned, polished tubes, object glasses 2 in., magnifies five times, in case, with shoulder strap..... | 16.50 |
| 8860 | Field and Marine Glass, tan calf, aluminum all-polished, object glasses 2 in., magnifies five times, in tan sole leather case, with shoulder strap..... | 23.00 |



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